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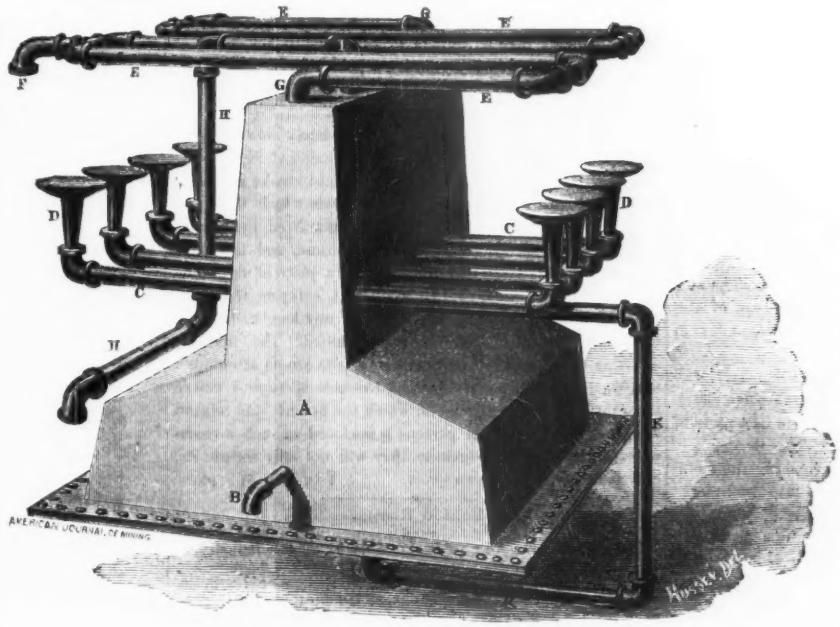
APPARATUS FOR BURNING CRUDE PETROLEUM.

This apparatus, which is similar to those on board the U. S. steamer Palos, is now in practical operation on the Battery in this city. It is the result of many hundred practical experiments, extending over a period of two years. It can be applied to any wood or coal boiler now in use, by merely removing the grate bars and placing this apparatus in their stead. A represents a cast-iron retort, the bottom being of wrought iron and bolted around the edges. B is a small pipe, connected with the oil tank, and through which the crude petroleum enters the retort. Its diameter where it enters is one-eighth of an inch. C,C,C, are arms of common iron gas pipe, screwed into the sides of the retort, having on their outer ends elbows, opening upwards, into which are inserted mushroom-shaped solid cast-iron burners, D,D, with fluted stems. The object of these burners is to spread the flame, and as their discs are always red hot, they serve to insure the ignition of any particles of carbon which may not ignite before reaching them. E.E.E, is a steam coil, made of iron gas pipe and loosely filled with iron borings. In use it is always kept red hot by the burners beneath. Steam enters this coil at the point, F, and after passing through it, enters the retort at each end through the pipes, G,G. H is a pipe connected with a small air-pump, which forces air through it into the retort at the point I, at a pressure of about half a pound to the square inch. K is a pipe which conveys gas from the retort to the burner, L, beneath it, where it burns and keeps the bottom of the retort at a red heat. Perhaps the practical operation of the apparatus will be better understood by describing the fire from the beginning. In starting with everything cold, a handful of shavings or kindling wood is lighted and placed beneath the retort for a few minutes, until its bottom is hot enough to vaporize the oil, when crude petroleum is permitted to run slowly from atank, which may be placed at any distance, through the pipe B, into the retort. Here, coming in contact with the heated bottom, it is at once vaporized, and its gases fill the retort, and, passing out through the arms, C, C, and the fittings in the stems of the burners, D, D, burn with a heavy and smoky flame.



APPARATUS FOR BURNING CRUDE PETROLEUM.

As soon as steam is obtained it is allowed to enter, at the point F, the red-hot coil, E, E, through which it slowly passes, and where it is either decomposed or intensely superheated As soon as the gases from the superheated steam enter the retort, a perceptible change takes place. The gas now burns with a very clear, hot and almost smokeless flame. This combustion needs only an adequate additional amount of oxygen to be absolutely perfect. This is not supplied by a natural draft, but by a small air pump connected with the pipe H, which forces the air at a steady prassure into the centre of the retort, where it thoroughly mixes with the hydrogen and carbon. The fire now burns with a clear, blue, intense flame, which is at once appreciated by all engineers and chemists. Not a particle of smoke is produced, nor is there the least collection of carbon in the retort, arms or burners; all has undergone combustion. The quantity of steam, oil, gas and air is regulated by separate faucets, so that the fire is under complete control, and can be modified or extinguished at will. The heat evolved is intense, far exceeding, in temperature, anything which can be produced by coal or wood, and yet the apparatus will last for years. Even the flues of the boilers last twice as long as with coal or wood fires; because there is no sulphur in the oil to injure hem. The fire can be increased or diminished, or entirely extinguished and relighted in an instant. During the whole series of two years' experiments on shore and at sea, not the slightest accident has ever occurred. The apparatus is easily managed by any man of ordinary ability. At a reasonable price, oil can be used at a great saving over coal, even in stationary engines; while at sea, when saving in tonnage and freight-room, in cleanliness and other advantages are taken into account, the value of this invention can scarcely be over-estimated.

The Iron Trade of Italy.

Among the conditions which affect the production of iron in Italy is the want of coal, the smelting of the iron being dependent upon the limited supply of fuel that can be obtained from the forests in the neighborhood of the mines. Iron ore is found in every part of Italy, and yields from forty-five to sixty-five per cent. of iron, the quality of which is generally first-rate. The mines are in the hands of private individuals or associations; but their rights are ill-defined, and the uncertain state of property, which is the consequence of frequent changes in mining legislation, has of late years tended to paralyze enterprise. With the exception of a few mines, belonging to companies where a better system prevails, there is a great want of skill, economy, and regularity in conducting operations. The mines are almost everywhere situated at considerable heights, from 1,000 to 2,000 feet above the level of the sea, where the depth of snow and the frequency of avalanches render access to them almost impossible in winter. It is only in this season, however, that they can be worked, on account of the quantity of water and the badness of the air at other times of the year. The men employed are generally engaged as agricultural laborers during the summer; mining being merely a subsidiary occupation when there is no other work. In some places, however, professional miners are employed. The latter earn 1s. 8d., while the former are paid 10d. per day. The number of blast furnaces in the whole of Italy is stated at only thirty-eight. The furnaces used in Lombardy, from time immemorial until the year 1840, when an improved system of construction was introduced, were square inside, and from nineteen to twenty-three feet high, producing nearly three tons of metal daily. The circular form is now generally adopted, and the height of the furnace is raised to twenty-six feet. The hot blast is used. The cost of construction of a blast-furnace, with all its appurtenances, is about £800. The number of men employed on a furnace at work is generally eight, their daily wages being from two francs to one franc eighteen centimes. Except in some rare cases, the cost of making bar-iron can hardly be less than from forty to forty-two francs per quintal (nearly two cwts.) This leaves but an insignificant profit at a selling price of forty-four or forty-six francs; and as best English iron can be bought as low as thirty-five francs, the home manufacture in the old way can no longer be sustained. The number of establishments for making machinery is about seventy, but very few of them have any real importance. Wages are generally from two and a half francs to three francs, three centimes per day. In such establishments a skilful artisan can earn as much as five francs per day by piecework. The raw material used is almost wholly of foreign origin. Scotch pig-iron, ordinary bar from Wales, Staffordshire, and Yorkshire, bar and sheet-iron of superior quality, and coal and coke from Newcastle. Rails are not made in Italy. Attempts were made to supply them at an establishment near Naples, in 1856, but it was found that they could not be delivered at less than double the price of those imported from England or Belgium. There are several establishments for the construction and repairing of rolling stock. At Genoa and Naples locomotives and tenders are turned out, which cost little more than those coming from abroad.

Artificial Stone.

Some interesting experiments have recently been made at the Patent Concrete Stone Company's works at East Greenwich, with a view of demonstrating the facility of manufacture and great strength of Ransome's artificial stone. A quantity of sharp clean sand, fine or coarse, according to the description of work needed, is mixed in a pug-mill with a solution of silicate of soda until about of the consistency of half-made mortar. This material is forced into moulds, or made into balls, into roofing tiles, ornamental boxes, balustrades, or any other useful or ornamental articles such as are to be seen in cut stone. When in this state it is soft, and will readily yield to a slight pressure. When the moulding is taken from the mould it is at once saturated with a solution of chloride of calcium. The two solutions thus coming into contact, chemical action sets in. The hydro-chloric acid leaves the calcium and seizes on the soda, forming a solution of common salt, while the silicic acid, leaving the soda, seizes upon the calcium, and forms silicate of lime—the most enduring stone with which we are acquainted. As the block is porous, the salt is readily washed out, leaving a quantity of sand cemented together by silicate of lime. The only matter of doubt concerning the material seemed to be its durability; and as to that point, though a longer experience than fifteen or twenty years cannot as yet be appealed to, science tells us that the material is what may be called indestructible. As to the strength of the material, some experiments were tried, and a block of about five or six inches cube was broken by a pressure of forty-four tons in the hydraulic press, while a block of Portland stone of the same size was crushed by a weight of four tons. A small block surface, two and a quarter square inches, gave way under a tension of eight hundred and seventy pounds—these blocks not having been made longer than a week previously.—*English Paper.*

Utilisation of Blast-Furnace Gas.

A few days since one of our contemporaries felicitated "the Black Country on the prospect of losing its unenviable title, if a plan now carried out at Earl Granville's ironworks, near Hanley, were generally adopted." The plan referred to is not an absolute novelty, but it is probably carried out to greater perfection at Hanley than at any other place. The works at which it is in operation consist of a suit of four blast-furnaces, and the mouth of that which is nearest to the boilers is covered over with a movable cupola. The gas and smoke generated in the furnace are carried, by means of iron pipes, to the fire-place of the boilers, seven in number, and also four kilns, used in the production of the hot-blast. The pipes discharge themselves just in front of a small bright fire, in passing over which their contents become kindled, and an almost constant stream of ignited gas rushes along beneath the boilers and into the hot-air kilns. The consumption of

the smoke prevents its escape up the chimney, with its attendant disagreeable effects upon the atmosphere; but we shall not be thought uncharitable if we say that, probably, in the eyes of the noble proprietor and his managers the saving of fuel is a far more important consideration. By utilising the gas of one furnace, from thirty to forty tons of slack per day are saved, and taking this and some minor economies into account, the saving is probably not less than £40 per week. Preparations are now being made for converting, in a similar manner, another of the furnaces, and when that has been done no slack will be required, and the saving still more considerable, and will amount to something important upon every ton of iron made.—*London Mining Journal.*

Original Papers.

[WRITTEN FOR THE JOURNAL OF MINING.]

A PROGRAMME OF ATOMECHANICS;

Or Chemistry as a Mechanics of the Panatoms.

BY GUSTAVUS HINRICHS,
Professor of Physic, Chemistry and Mineralogy, at the Iowa State University, Chemist of the Geological Survey of Iowa, etc.

(Continued from Page 66.)

SECTION I—PANTOGEN AND THE ELEMENTS (§§.6—56).

I. The atoms of pantogen, or the *panatoms*, are necessarily all equal. They must be considered as simple material points, totally devoid of all occult properties.

When combined they are at certain fixed distances from one another. Three combined form necessarily an equilateral triangle; since this is the only position of stable equilibrium of three *equal* material points. More panatoms combining herewith, in the same plane, will continue this geometrical law, thus forming *hexagons*, &c., divisible into regular triangles.

The regular hexagons thus resulting contain 1, 1+6=7, 7+12=19, 19+18=37, etc., panatoms. But four panatoms might also form a square; others combining therewith would produce rectangles of p and g panatoms in the two sides or squares of p^2 panatoms.

Such figures I call *atomares* (*a*). They combine again by vertical superposition, so as to form prisms of m such planes or atomares; m may be called the *atometer*, the prism resulting the *atobar*, and the total number of panatoms in each prism is the *atogramme* g (atomic weight).

Take the hexagonal atomare $a=(7)$, composed of seven panatoms; take $m=4$, or put four such planes vertically above one another, and you have an atom of nitrogen—N=4. (7)=28: a *hexagonal prism!*

In this manner all element-atoms are built up. The simplest is that of hydrogen—H=2. (1)=2, a prism of atomare=1 and atometer=2. Hence also my atogramme is in general double the modern atomic weight.

In this there is nothing arbitrary; on the contrary, the forms alone of the atoms suffice to give a comprehensive classification of the chemical elements, embracing the best parts of all classifications previously proposed.

According to the atomare being composed of equilateral triangles or squares, the elements are divided into two orders: I. *Trigonoids* (or metalloids), and II, *Tetragonoids* (or metals).

According to the geometrical outline of the atomare these orders are subdivided into *genera;* the *species* (or elements) correspond to given values of the variables expressing the geometrical form of the genus. As the species is represented by the *roman* initial and the *number* (atogramme, g) so I represent the *genus* by the *Greek* initial and the *algebraic formula*. Thereby our chemical formula are very much simplified. The substitutions may be represented in their generality.

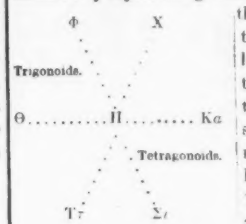
Thus, Φ=m.(p) represents the genus ***Phosphoids***, consisting of N, P, As, Sb, Bi. The regular hexagon (7) has a radius equal to the distance between any two combined panatoms; let this radius be r. The regular hexagons of radius 2r, 3r respectively contain 19, 37 panatoms. The latter does not occur complete, but as (35), or lacking the extreme panatoms in one of the diameters of the circumscribed circle.

In this genus we have thus the radii of the atomares *p*, as 1:2:3. In N we have m=4; but the altitudes of geometrically similar hexagonal prisms must have the same ratio as their bases; or, in other words, the atometers *m* of the phosphoids must also be to one another as 1:2:3; they are therefore 4, 8, 12. Hence the three elementary atoms of this genus are 4 (7)=28; 8 (19)=152; 12 (35)=420, which correspond to the observed to the observed values of *g* for N, As, Bi, deviating for As only one unit from the usually accepted atomic weight (for H=1).

In the genus *Chloroids* X=(1)+m.(p) the principal m=5. Thus 5(p) may be added to either of the above, 4, 8 12. Only two of these are known as yet, viz: 4+5 or 9(7)=63=P and 8+5 or 13(19)=247=Sb, completing the group of the Phosphoids.

In regard to the deviations between my calculated values of *a* and those observed I may state: first, they are zero for all well-known atomic weights, H, O, N, C, S, Fe, Na, Ca, Fe, &c., &c. Second, they are always very small, and my values are thus *a priori* as probable as those usually accepted, especially when we remember the remarkable correction by *von Sommaruga and Schneider* of the values for Ni and Co, which were supposed to have been permanently fixed by *Dumas, Gibbs*, and others. *Stas'* late endeavors are the same as those of *Berthelot*, in regard to the fixed equivalents.

The most convenient representation of this classification I obtained by representing each genus by a line radiating from the centre—H. (pantogen=1); the trigonoids upward and to the left, the others downward and to the right. In each of these lines the species or element is marked, so that its distance from the centre represents its atogramme. We have thus the genera 1, *Pantoids*, Y, containing only H; 2, the *Chloroids*, X, Fl, C Br, Io; 3, *Phosphoids*, Φ—N, P, As, Sb, Bi; 4, *Sulphoids* (or Thionoids), Θ—O, S, Se, Te. These are Trigonoids or metalloids. Of Tetragonoids we have:—5, *Kaloids*, Kα—Li, Na, Ka, Rb; 6, *Thalloids*, Θ′=In, Cs, Tl; 7, *Calcoids*, Xα=(Mg), Ca, Sr Ba; 8, *Cadmoids*, Kδ=(Mg), Zn, Cd, &c., &c.



For the details and other general results I must refer to my Atomechanics. Here I can only state that all genera are as definite as the Phosphoids, and that Cr, Mn, Fe, Ni, Co are *varieties* of the species Fe in the *Ferroids*, that further experiments will prove Cr=52, Mn=54 (if H=1). In the table of the phosphoids in my "Atomechanics" the product for As and Sb, and the atomare for Bi are mis-stated, having been written in the bustle of a printing office.

[FOR THE JOURNAL OF MINING].

ABSURD PATENTS—AN ARRANGEMENT TO MAKE GHOSTS VISIBLE.

It must be acknowledged that the American patent office compares very favorably with the English and French patent offices, in regard to granting patents for absurd pretended inventions. The examiners in our patent office refuse to grant patents for such absurdities as are mentioned in this paper—page 73—called "A Patent Vital-Fluid;" but the French and English officers take advantage of the ignorance, insanity or vanity of an individual, by granting a patent for anything, and besides, charging the poor would-be inventor from double to ten times that charged in our patent office.

This honesty of our patent office was lately illustrated by the refusal of granting a patent to a spiritualist of New York, who applied for a patent for an arrangement to make ghosts or spirits visible. It consisted in a room from which light and air was almost excluded, only air was admitted by a stop-cock, which was opened from time to time, and light was passed, in a very small quantity, through a piece of dark-blue or black glass, or fluid, so that when first entering the room nothing was seen, but remaining in it for any length of time a very faint view of the interior was obtained. The inventor asserting that the bodies of ghosts or spirits are so attenuated that common light passes straight through them and makes them invisible. The ground on which the patent was refused was, that if a company of persons is enclosed in such a room, without sufficient air to breathe, they will not only see ghosts, but also give up their own ghost. VAN DER WEYDE.

Gold in Russia.

The quantity of gold produced in 1864 by private industry, as well in the Oural mountains as in Eastern Siberia, amounted to nineteen tons, showing a slight falling off, as compared with the year 1863. The year 1865 was one of the most favorable character for the production of Russian gold, the results obtained having everywhere surpassed those of preceding years. As regards Eastern Siberia, the production of 1865 exceeded that of 1864 by 2·743 tons, and that of 1863 by 1·086 tons. This augmentation, which would have been greater if drought had not often interrupted the works, was the result of works in new bearings. In Western Siberia, 1865 yielded 0·272 ton more gold than was obtained in 1864, and almost twice as much as was produced in 1863. In the Oural district the production has scarcely changed of late years. From an absence of statistical documents as to the production of the State in the Oural district and in Eastern Siberia, we can only, in order to form an idea of the importance of its bearings, adopt as a minimum the average production of former years—that is, about 1·670 tons for the Oural group, and 2·293 tons for Eastern Siberia. The total production of gold in Russia was estimated at nearly twenty-three tons in 1864, and at a little more than twenty-six tons in 1865.—*London Mining Journal.*

Lower California.

Prof. Gabb of the State Geological Survey, who recently made an extended exploration of the Peninsula, has presented to the Academy of Natural Sciences a report on the geology of the country, accompanied by a map. He represented the Peninsula as quite worthless for agricultural purposes, and its mineral resources as confined to a point on the northeast, where the Triunfo and a few other valuble mines redeem it from utter worthlessness. He stated that prospecting had been done extensively all over it, but with the above exceptions without profit. Geologically, the Peninsula presented many of the leading features of the coast range in this State. The most remarkable point of resemblance is the extent of the table mountain formations, which, like those in California, consist of layers of sand, gravel and boulders cemented together, and capped with layers of volcanic rocks, but with the important difference that while the table mountains of California are rich in gold, those in Lower California contain none of that desirable metal. [Rather a damper on the new Lower California Company.]—EDS. JOURNAL OF MINING.]

☞ The Pennsylvania Canal Company have recently made a survey of the canal and river from Harrisburg to Huntingdon, with the view of adapting the Juniata to slackwater navigation. Such a change would soon create steam navigation, at least for light draught boats. At a comparatively small expense, a channel from fifty to one hundred feet wide and from two to three feet in depth could be made by removing a few rocks and stones.

Mining Summary.

GOLD AND SILVER.

Nevada.

The Comstock.—The *Mercantile Gazette*, July 9th says: Savage stock has been in marked favor, ranging from 4,500 to 5,000, closing at 4,980. The company have issued a call for a stockholders' meeting, to take into consideration the increase of the capital stock, by reducing the denominations of the stock shares. Thus, there are now 800 shares, par $2,000 each, but the price is $5,000. As the matter stands, no person can invest a less sum than $5,000. It is now proposed apparently to issue for each of those shares, twenty new ones of $200 each. These would then sell for $250 each, so that small investments may be made in the stock, and a large number of stockholders be created. The Savage mine, for June, shows the following results:

	Ore raised, tons.	Approximate value.	Value per ton.
June 8	1,918	$ 86,062	$44 82
" 15	2,350	103,879	44 20
" 22	2,291	93,363	40 75
" 29	1,791	80,177	44 75
Total tons	8,350	$363,481	$43 53

The developments of the mine are favorable. This company have declared a dividend of $300 per foot .....Chollar stock has been active at figures which range 430@487½, closing 475. There have been further discoveries of good ore reported in the North and Blue Wing slope. The bullion product for the month of June was $345,000, from 12,000 tons, giving $28 per ton, and leaving a profit of 110,000, or over $9 per ton. The company pays out $70,000 for its dividend, $25 per foot on the 10th inst., and carries over $65,000 surplus.....Yellow Jacket stock has been pretty active at fluctuating prices. It has been a favorite with a class of operators. It sell to 1,480 from 1,665, recovered to 1,655, and closed at 1,570. The bullion receipts for May were $195,913 65. The expenses $154,204. A dividend of $75 per foot is payable on the 10th .....Kentuck stock has been very active, rising from 445 to 550, and closing at 495. The June bullion receipts reached $130,255 51, and the payment of $40 dividend leaves a balance out of $117,344 37 ... Overman stock has been largely dealt in at prices ranging 206 to 240, closing 225. The reports from the mine continue of a high character, but the majority of the Trustees who have no pecuniary interest in the property thwart the operations of the stockholders, who appointed Mr. M. McCullough superintendent, but who was attempted to be superseded by Mr. Curtis, by a majority of the trustees. Mr. McCullough refused to give place. Suit for possession was brought and a hearing before the Supreme Court of Nevada had on the 3d inst. The facts were ordered to go before a jury on the 9th inst. The stockholders' meeting will be held on the 11th, when a new board of trustees will be elected, and the dissensions of the company brought to a close.....Imperial stock has been dealt in to a considerable extent, ranging from 220 to 237, and closing 212. There is no material change in this mine. The bullion receipts for June were 107,000.

Fluctuations in Leading Mining Shares for the Past Three Months.

NAME OF COMPANY.	per ft.	April 10th.	April 20th.	April 30th.	May 10th.	May 20th.	May 30th.	June 10th.	June 20th.	June 30th.
Gould & Curry		390	480	590	570	660	575	740	600	715
Ophir		255	345	450	435	360	340	335	265	322
Savage		2,200	2,600	3,050	3,225	3,500	3,900	4,300	4,550	4,475
Chollar Potosi		330	405	600	535	645	580	480	465	455
Hale & Norcross		.....	.....	.....	.....	.....	.....	4,000	.....	16
Daney		.....	.....	10	12	25	15	25	16	53
Bullion		.....	31	89	50	40	20	45	41	200
Overman		12	28	49	47	48	62½	170	210	74
Sierra Nevada		6	14	20	12	16	8⅝	12½	10	630
Yellow Jacket		1,117	1,300	1,650	1,650	1,835	1,725	1,520	1,515	217
Imperial		260	278	280	250	210	195	193	193	2,000
Crown Point		1,340	1,395	1,700	1,765	1,640	1,765	1,750	1,850	550
Belcher		170	240	410	425½	400	380	415	475	400
Alpha		.....	400	460	.....	402½	411	410	450	185
Empire M. & M. Co.		175½	187½	202	195	170	170	162	170	67
Confidence		59	57	70	70	67½	70	60	62½	11
Exchequer		.....	5	18	10	.....	.....	9	13	452
Kentuck		.....	.....	.....	.....	225	410	.....	535	197
Gold Mine Mill		.....	.....	180	170	165	165	.....	100	18
Segregated Belcher		.....	.....	.....	.....	.....	.....	.....	.....	.....

Reese River.—"B. C. T.," a correspondent of the *Bulletin* writes from Austin, June 19, his experience among the mines and mills in that vicinity. He states: The incline of the Savage is at present 350 feet, and sinking and drifting is being carried on vigorously. These works are now extracting about twenty tons of ore a day, which is averaging $120 a ton, and employing seventy-three men. Their old engine is twenty horse power; and, besides hoisting, is used for pumping purposes, throwing from the mine 1,800 gallons a day. A new fifty horse engine has arrived, and will be put in operation next month. The Buell North Star has an incline of 400 feet, and is sinking and running three levels, taking out about eight tons daily, which is averaging nearly $150 a ton. At present their force consists of thirty-six men, which is to be considerably increased this month. The Buell North Star engine is a very fine thirty-five horse power one, and is in excellent order. There is quite a quantity of water in this mine, and it is believed that the services of a pump will be required ere long. At present the water is hauled up in a bucket. A great deal of the ore at present being taken from this mine runs nearly $400; but the average is as stated above. The Manhattan shaft is 330 feet, and the company is running three levels, employing forty-five men, and taking out ten tons of ore every twenty-four hours, averaging $290 a ton. These works have a splendid twenty horse engine, partially engaged in pumping, 10,000 gallons of water being thrown out of the mine daily. The Manhattan mine (twenty stamps,) is employing about fifty men, and is working night and day, and doing but very little custom work. The Manhattan is being provided with eight new roasters, which will be in operation in a few days. The Keystone, twenty stamps, employs forty-five men, and is also running night and day. The Parrott Mill, at Big Creek, eight miles from this city,

and the Franklin, three miles from Austin, are both running. The incline of the Flinda is 343 feet, and the company is sinking and running three levels. There are forty men at present laboring at this mine, taking out an average of three tons of ore a day, paying nearly $30 a ton. There is no water in the Flinda, and a small engine at present does the work. In a short time a new sixty horse engine will be put up, the force of men will be greatly increased, and it is proposed at that time to take out between eight and ten tons of first-class ore daily. The Magnolia incline is 207 feet, and sinking and drifting is both being carried on. The Magnolia is running two levels, and ore averaging $210 a ton is being taken out. But twelve men are at present employed at this mine, taking out on an average one ton a day. What little water that has made its appearance is easily got rid of by hoisting. I found this a very clean mine, and some exceedingly rich ore is being extracted. The Magnolia will increase its force next week, as there are lots of nice pockets to be emptied. The Troy incline is 335 feet, and the company is sinking and running three levels, and will commence another next week. The engine is a very nice one, being about twenty horse power. Only seventeen men are at present engaged in this mine, and less than a ton of ore a day is being taken out. There is little or no water in this mine, and the ore runs up to $318 a ton. The Washington mine, which at one time took out some very rich chloride, paying as high as $1,000 a ton, has not been working for a long time, and is still as quiet as a haunted house. The Washington incline is about 250 feet. The machinery of the Douglas works, which have not been in operation for many months, has been taken down and carted away. This company sunk an incline 375 feet, but found hardly nothing but base rock. The Illinois, which sunk an incline 400 feet, is also quiet, on account of the meagre discovery of pay ore. The Stranger has also been idle for over a month from the same cause. The three latter named mines, I believe, are owned by San Francisco companies. There are several other small mines which are closed on account of the trifling amount of pay ore taken out, while a multiplicity of one-horse and bogus concerns are among the things that were. Yet there are lots of men plugging away at various points upon Lander Hill. The Diana is taking out some very rich ore, averaging nearly $300 a ton. This mine has a shaft 200 feet, and an incline 250. The engine is a thirty horse power one, and hoists about three tons of ore a day, and also the water, in a bucket, there being no pumping machinery in operation at present. Some twenty odd men are employed at the Diana, most of whom are engaged in running levels. There is no mistake about this being a good mine, but an exceedingly dirty one, I vow, for a gentleman with French cassimeres on to penetrate. Work is going on at the Birchfield shaft, located about 200 feet above the Buell North Star. The shaft is a double one, and is already sunk a distance of nearly one hundred feet. Some fine works will be erected over this shaft as soon as the machinery arrives, which is on its way. The bugest enterprise on Lander Hill just now, is the Plymouth Silver Mining company of New York, which is engaged in sinking a vertical shaft for the permanent development of its mines, which are believed to be second to none in Austin. The shaft is four by eight feet, with heavy pump timbers every sixteen feet, and is eighty-three feet in depth. The engine, which will arrive here in a few days, and which will be in running order about the middle of July, is forty horse, which is considered sufficient for sinking eight hundred feet. The property of this company consists of the Kaleseed, Parent, Zimmerman and Jacob's ledges, situated above the Diana, Savage and Buell North Star, and below the Magnolia, Flinda, Fuller and Troy ledges. The ore from the Kaleseed mine, recently worked at the Parrott mill, gave a return in bullion of $1,763 02 per ton, the mill pulp assaying $2,108 36 per ton. Charles C. Save, the superintendent, showed me a splendid piece of chloride ore and an assay, which marked $14,121 08 per ton. It is believed that ore can be taken from the Kaleseed which will, by close picking, work $5,000 a ton. The Fuller mine, above the Kaleseed and below the Troy, has taken out during the past five months, with an average of five men, working by daylight only, the following: One lot of four tons, pulp average, of $141 per ton; one lot of five tons, of $330 per ton; one lot of eight tons, of $780 per ton; one lot of five tons, at $810 per ton; one lot of eleven tons, at $318 per ton. The new incline of the Timoke is down one hundred and ninety feet, and the work of sinking is being put through with great vigor. An engine and hoisting machine are on their way, and will be put up as soon as they arrive. It may be remembered that ore has been taken out of this mine that assayed $500 a ton. The Great Eastern is at present in full tide of success, employing between thirty and forty men, and taking out nearly ten tons per day of very rich ore, a large amount of which is shipped to Wales. This mine has some first-class machinery, and hoists from a vertical shaft nearly four hundred feet. The wild cat and bogus mills are all quiet, which will ultimately be of advantage to the people of Reese River. There are five idle mills that are standing monuments of folly and headstrong speculation, and a warning to swindlers generally. These mills were built some three years ago, by parties who prevailed upon other parties to buy them upon grossly dishonest representations. These mills were successfully sold by these scientific swindlers before there was any ore to work, or hardly any developments had been made in the rich mines upon Lander Hill. The New York and Lander, the Rhode Island, the Union, Silver Hill, Midas, and the Boston and Nevada, are all quiet, and for the present, at least, about played out. The Confidence will be torn down. These mills are all in Austin and vicinity. The Union mill at Ione is froze out. The New England has gone by the board, and its Puritanical superintendent has nestled down in Bosting with his little flock. The Knickerbocker and the Kensington mills are also quiet, and with lots of chances for remaining so. The Bullion company at Reveille are taking out some splendid ore; and everything is progressing in that district according to anticipations. The ore of the Fishman resembles the Highbridge, and is full as rich in chlorides. Sinking inclines are going on in many places upon the ledge, and the chances are that the Reveille district will send to market before another year a large amount of bullion. The Cortez district is at present the big thing. Its ledges are very wide, and the ore is unexcelled. Extensive preparations are being made to erect hoisting works and mills, as it is believed that the Cortez is a second Comstock. A splendid mill (thirteen stamps and four roasters,) is running night and day at this ledge, and really ore is being taken out rich enough to pack a hundred miles upon mules. There is quite a depression in business in this city just at present, caused principally by the prospecting that is going on in the southeast, most of those engaged in the discovery and development of the Belmont mines being former residents of Austin. It is estimated that the decrease in the population of this city is at least six hundred during the past year. Rents, however, have experienced no abatement in rates, and prices of provisions and dry goods remain the same. Real estate is up and improving, being held much higher than it was six months ago. Several new brick buildings are going up on Main street, and there is no scarcity of money, at least among those who have it to throw away, if I may judge from its rapid disappearance in saloons where people go to "drown their sorrows in the flowing bowl," and where such little exercises as keno, faro, and the like, are kept up until rosy morn. I think of Austin as I do of Virginia City—that it is a permanent place, and will improve and grow rapidly so soon as the people grow more temperate in their general management of business, and better appreciate the true value of their easily-earned money.

Montana.

Colonel McClure, whose letters from Colorado have attracted so much attention, is now among the mines and mills of Montana. In a letter to the *Tribune*, dated Virginia City, June 27, he states Virginia City, the capital of the Territory, was founded in 1863, and was originally called Varina, in honor of the wife of Jefferson Davis. The first settlers were mainly rebels, and to this day they have maintained their supremacy in this portion of Montana. Alder gulch, of which Virginia was originally but the mining camp was the richest gulch of the size ever found in any of our gold regions. It first built up a considerable mining town a mile below Virginia called Nevada, but it has gone into dilapidation, and is practically abandoned. Out of this gulch millions of gold have been taken. For ten miles it has been worked, some places as much as 500 yards in width, and at its head are now found the richest quartz leads. Although every bushel of earth in the gulch has already been panned, still it is lined with miners who are now bringing the more improved systems to work it over again profitably. Ditches have been brought from lakes ten distant, and the hydraulic process is now washing down the hard banks and sluicing the already once worked earth. A number of quartz mills have already been erected on the leads at the head of this gulch, and when brought down to proper management and legitimate enterprise, must make immense returns to mill owners. It is admitted, I believe, that no better defined or richer leads are to be found on the continent than in the summit district. Imperfect machinery, worse direction, and impatient, ill-advised, and wasteful efforts at development have made failures on mines where practical men would gather fortunes. This whole belt, or rather the entire mass of broken and confused ranges seem to be studded with the precious metals. Helena has taken a sudden start, and now distances this city in population and enterprise. Most productive gulches are being worked there, and very rich gold and silver mines have been developed and tested by mills. Argenta, forty miles distant, has silver mines which yield from $100 to $400 per ton, and the lead or litharge is worth $2 50 per ton at the furnace. The litharge is eighty per cent. pure lead, and lead is now worth thirty cents per pound wholesale. It will in a short time become cheaper, and supplant wood for roofing. I learn that one company will shortly turn out sheet-lead for that purpose. Deer Lodge, west of a high mountain range from here, has also developed very valuable gold and silver mines, and rich gulches are being worked there; and Edgerton and Jefferson, directly north of this, are yielding largely of both silver and gold. As yet, the Montana mines have not had to contend with the base metals as in Colorado, but as they descend on their mines, they will meet with them more or less. Their leads are yet in the infancy of their development, and at no point that I have been able to hear from have they reached a point sufficient to prove the measure of richness of the Montana gold leads, while in California they must sink down a considerable depth to get paying ore, but they work ore at a profit from the grass roots, with labor and all expense twice as high. Laborers command five dollars a day; miners, engineers, etc., from six to eight dollars, and most of the ore is raised by shafts to hasten operations, instead of tunneling and waiting until proper systematic development is attained. I have seen ore worked profitably that costs twenty-five dollars per ton to deliver it from the mines, while in California the same ore would be delivered at about three dollars. The hills in which the valuable leads are found are singularly adapted to the cheap delivery of ore by tunnels. Most of the mines I have seen could be reached by tunnels of a few hundred feet, and then be struck at a great depth from the surface. In a few years the mines will be worked as they should be. Speculative companies will die out in bankruptcy, and practical men will make the mountains yield fabulous quantities of gold and silver. When it is considered that these mines have not been known more than four years; that they have been almost inaccessible for machinery until one year ago, and then only by the perilous overland route, or the almost equally perilous waters of the Missouri, it is wonderful, indeed, that human energy could have accomplished what it has accomplished here. It is not strange that its quartz mining is most imperfect in both machinery and management, and thereby rendered comparatively unproductive. Notwithstanding all these obstacles, Montana is second only to California in her yield of gold, and will this year go up to fully twenty millions of treasure, with a gradual increase from year to year. As legitimate enterprise is displayed in her mines of almost boundless extent and bewildering wealth, I doubt whether any part of the world will yield such large returns on the same capital and labor as will Montana in time. Just now the best scientific talent is directed to the mastery of our Rocky Mountain ores; each year will simplify and cheapen their reduction; capital and energy will come armed with the improvements science may offer, and make Montana, now with but four years of history, the great centre of the production of the precious metals on this continent. It has the experience of the older mining Territories to profit by, and its almost impassable mountains have been a wall of protection against mad speculation and the waste of millions to paralyze legitimate operations. Colorado is cursed by speculative corporations, which have not vitality enough to live, and not sense enough to die, and they sit in idleness and bankruptcy upon valuable mines; but Montana is open to practical business enterprise, and will well repay those who thus come to develop her surpassing richness. In addition to the vast mineral wealth of Montana, the production of breadstuffs is now quite equal to the consumption. Wheat, barley, oats, and rye, and most vegetables, are raised here in the valleys in wonderful perfection. It will startle Eastern farmers to read that wheat fields in Montana have produced eighty bushels to the acre, but it is certainly true. Corn cannot be grown here, as the season is too short. Cattle graze out all the winter in the valleys, and usually keep in excellent order. Last winter, however, many were lost by the uncommon severity of the weather, but during any ordinary winter the cattle will sustain themselves comfortably on the grass. Even as far north as Fort Benton they graze their stock all the year. The finest agricultural portion of the Territory is still uninhabited, save by the savages. The Yellowstone region has the most salubrious climate north of the Platte, and it must soon be surrendered by the Red man, and blossom with beauty and plenty to reward the husbandman. The irregularity of the mails to this Territory is terrible. Of the *Tribune*, thirty copies of the daily are now due me here, and I have received but two. Of the *Times* sent me semi-weekly since the 1st of May, I have received but one number. Letters or papers mailed in Wells, Fargo & Co.'s mail-bags come promptly. At Salt Lake I received papers and letters through that channel before the same dates had reached Denver by mail. The government pays Wells, Fargo & Co. $1,000,000 or so to carry the mails, but they manage to delay and lose so much mail matter that business men are glad to pay them treble postage, in addition to the government postage, to insure prompt transmission of papers and letters. They carry more than half the letters from Salt Lake to California in their special mails, and have government envelopes, with Wells, Fargo & Co.'s stamp on, which are bought and used to guard against the loss or delay of mail matter. While Wells, Fargo & Co., are permitted to have special mails, carried at a large extra profit, they have every inducement to confuse, delay, and lose the regular mails, so as to compel correspondents to pay them, in addition to their government compensation, twice or thrice established postage rates, and they have not been slow to avail themselves to the utmost of this advantage. If they can carry letters and papers through in regular time in their own special mails, why can not they bring the regular mails through in the same time? They have contracted to deliver them promptly, and save when stopped by a public enemy, their failure to do so must be the result of carelessness, or a want of the necessary coach-room and teams, all of which they have obligated themselves to furnish. I found at different stations on the way tons of mails piled up, and sometimes mail-bags are scattered along the road, appapently dropped off and carelessly abandoned. If Congress would have the far West supplied promptly with mails, for which an ample sum is paid now, the right to compete with the mails must be taken from the company, and the contract enforced rigidly. But one coach has been captured by the Indians on the Plains this spring, and yet tons of mail matter have been lost. Where is it? Will the government make the inquiry?

Idaho.

The Silver City *Avalanche*, of June 29th, says: The Cosmos mill finished crushing the ore on the yard, and cleaned up during the week a large amount of amalgam—more than the grade of ore crushed was supposed to contain. There is now a full two months' supply of assorted rock on the dump at the mine. The workmen at the mine report the ore coming out to be of good quality and improving .....Twenty-five hundred pounds of ore from the Morning Star ledge was crushed one day this week, and yielded $370 71 in bullion .....W. B. Crane, superintendent, informs us that the Ainsworth mill will be started up the ensuing week. Ore from the North Star ledge is now being hauled to the mill. The Ainsworth donkey engine for hoisting is to be placed on the Oro Fino, and as soon as possible the Ainsworth mill is to have a constant supply of Oro Fino rock to crush. A contract to this effect has been entered into. The Owyhee mill starts up on Monday. The Minear commenced on Whiskey gulch ore, but broke some machinery, by which it is temporarily stopped.....Messrs. Hallenbeck, Stevens and Maguire have reached a depth of over twenty feet by a new shaft on the Nevada ledge, mill tests of ore from which were said to yield over fifty dollars per ton .....Mr. Dr. H. Jackson informs us that the Poorman company on the north extension has increased its laboring force to twelve men, and next week will be doubled.....One half ton of ore from the Scandia ledge was crushed in the Webfoot mill this week, and yielded at the rate of thirty-five dollars per ton. The ore was from the surface, and contained much talc and barren rock .....The Potosi ledge, just west of town, looks well. Shaft down about twelve feet, on a ledge of two feet, with indications of an increase. It is worked day and night. Some thirty tons of ore liberally filled with gold and silver on the dump .....The *World* gives the following: E V. Ankron writes from Middle Boise, saying himself and party had been prospecting about half way between Goodrich's ranch and Yuba, and struck good paying ground, and says there are paying claims enough for a thousand white men and any number of Chinamen. .....A letter from Pioneer gives good reports from that vicinity. The Elkhorn Quartz company has made another heavy clean up. A bogus dust operator was caught, and escaped from Pioneer.

Colorado.

From the Georgetown *Miner*, July 25th, we condense the following: Martine's works are running upon Nuckolls ore .....Parties at work on the New Boston lode are now sinking a shaft below the bed of the drift by which the mine was previously worked. This shaft is now about six feet deep and the miners have disclosed a continuous vein of argentiferous galena two and a half feet wide. Blocks of this pure ore weighing three hundred pounds, have been hoisted from the mine.....The penstock of the Georgetown Silver Smelting company's works is completed, and the crushing machinery will start up as soon as the shafting, etc., can be arranged. At these works they took out silver bullion last week, the coin value of which was $800, currency value $1040 .....Messrs. Parker & Darrah have sold the Muscovite lode for $15,000 cash to a company hailing from Keokuk, Iowa.....An extension of the celebrated Mexican lode on Columbian mountain has lately been struck. The lode can be traced nearly the entire distance by means of the outcrop. .....The *Register* learns from parties just in from Ward that the Ni Wot company will be ready to resume work by the first of August. The new mill is far superior to the one which was burned. Their mine now shows a six-foot crevice of solid ore of very rich quality. The Washington lode is also turning out very superior ores and gives promise to be one of the leading mines of that region. The Cressy mill is at work every day and doing well. The Long's Peak company has got through the cap on the Comet lode and will commence running their mill shortly. Three arastras are being put up on James creek, just north of Ward, and a company are preparing to put up a mill at Gold Lake. Things generally look well in that region.

Wyoming.

The Salt Lake City *Vedette*, July 20th, says: We have no reliable information at hand yet as to the extent and richness of the new gold mines on the Strawberry, but adds: On Sunday last Brigham Young in the course of his discourse is said to have declared his belief in their richness, and of all men who have not been there he is the most competent to pronounce an opinion in the matter.

Oregon.

From late Oregon exchanges we learn that gold-bearing quartz has been obtained on the coast side of the Wallamet, about fifty miles southeast of Eugene City. The pieces of rock were threaded with gold to an extent which gave them the appearance of being largely composed of that metal. Several ledges have been discovered in the vicinity.

Canada.

We have nothing of importance to lay before our readers this week touching the Madoc mines. The rush there, we are informed, still continues, and is greater than the regular line of stages can accommodate. We notice the following assay made by Mr. Myescoff, who has recently opened an office at Madoc. We suppose they were made by the Wyckoff process. Six pounds of ore from Messrs. Mitchell & Sparling's Eldorado mine contained, gold, seven grains, being at the rate of $93 34 per ton; silver, five and a half grains—$30 per ton. Four pounds of ore from Messrs. Borland and Wilcox's mine, which, as well as the Eldorado, is situated on the Moore farm, containing one grain of silver—ten dollars per ton. The yield of twenty-five pounds of quartz from the Gunsolus mine, situated on lot No. 17 in the sixth concession of Madoc, was at the rate of $23 40 per ton of gold, and three dollars per ton of silver. Mr. Lombard also published a certificate that some silver sulphuret ore, which was assayed by Messrs. Wyckoff & Co., in New York, and which is worth about $270 per ton, was taken by him from the Moore mine, on the northeast quarter of No. 17 in the fifth concession of Madoc. The *Mercury* complains of one drawback attending the renewal of the mining excitement, which is likely to impede the development of the mineral resources of the district, and that is, that many owners of lands are led to believe that their property contains rich beds of silver ore, which induces them to ask such high prices that no one will be found likely to invest money in purchasing from them; while possessing no means themselves they are unable to get their (possible) buried treasures out of the earth, where they are consequently likely to remain for years to come.

COPPER.

Pennsylvania.

We have been informed, says the Allentown *News*, that a company of gentlemen of this city have leased a tract of land—eight acres—situated in North Whitehall township, and within a short distance of Guthsville, of Mr. Reuben Sieger, of this city, with a view of opening a copper mine. The surface indications are pronounced as being good, and the old story that copper has been found in that vicinity years ago, has caused them to take this step The company is an enterprising one and work will be commenced at that place immediately.....The *Dispatch* of the same place says: The parties at present engaged in searching for copper ore on the land of Mr. Jacob Geisinger, in Salisbury township, this county, were on Saturday afternoon rewarded for their labors by striking a vein two and a-half feet thick.

LEAD.

Iowa.

Dr. C. A. White, says a correspondent of the Chicago *Evening Journal*, has recently been making examinations among the lead mines of this State, for the purpose of completing a work begun by his predecessors. He gives the following as the result of his research, and which appears in the *State Register*: Lead mining is now in a tolerably prosperous condition, but there were times in its early history when more ore was raised per man than now. The increased price in lead makes mining as profitable now as it ever was, although it requires a greater proportion of labor and skill to obtain the ore than formerly. Little or no change has taken place in the methods either of mining or smelting for twenty years, except the projected draining of the mines by means of adit levels. An enterprise of this latter kind has been in progress for a couple of years by a New York company, and promises to be very successful. A large area will be drained by this level when completed, which experienced miners believe will yield large amounts of lead ore, which are now inaccessible on account of the water. Should this enterprise succeed, there are other regions near Dubuque which may be drained in the same manner, with equally good prospects of success. A new era in the history of Iowa lead mining evidently depends upon the success or failure of the company now operating. Up to the present time there are no indications that deeper mining will be profitable, or indeed in any degree productive. The thickness of the galena limestone in the vicinity of Dubuque is about 250 feet, and the principal portions of the lead ore is found above the middle of it, very little being found near its base or top. The only exception to the latter known to me, is shown in an opening recently made a short distance from the city by Messrs. McCraney & Hickok. Here these gentlemen have found a lead-bearing crevice in the extreme upper part of the galena limestone, which has no cap-rock, the shales of the so-called Hudson river group lying immediately upon the top of the fissure. What the extent of this deposit of ore is remains to be proven, as it has only been opened a few days. Upon some specimens of lead and zinc ores thrown out from this mine, and also some presented to us by the proprietors, we found numerous small crystals of native sulphur. Sulphur in the water of springs is, of course, well known, but we believe this is the first discovery of native crystallized sulphur yet found in America, and is also somewhat at variance with opinions which have been entertained concerning the occurrence of sulphur in nature. Science is progressive, and why should not Iowa contribute her share to its progress? The doctor announces that a remarkable fact came out of his investigations at Dubuque, viz.: that there was a marked difference between the lead ore of the east and west and north and south lodes. This has not been heretofore known, and the matter has been referred to that eminent scientist, Professor Hinrich, of the State university, who is zealously investigating it, to unravel the mystery of the ages to which they belong if possible.

Montana.

The *Post*, of July 13, says: Negotiations have been pending for some time between Professor Marshall, superintendent of the Gaston & Simpson company, and Messrs. Hall and Foot, contemplating the purchase by the company of the Gold Mountain lode from the latter gentlemen. The sanction of the company was received by Professor Marshall on Thursday, and 1,200 feet ordered purchased at $23,000.

OIL.

Pennsylvania.

The Titusville *Herald* has the following on the petroleum business: Few people are aware of the great amount of oil which has been marketed—the addition which it has made not only to the wealth but to the business of the country. During the year 1863 the production was nearly 4,000,000 of barrels, equal to 2,500,000 barrels of refined oil; of this amount over 1,600,000 barrels was exported. These are large figures, indicating an immense business; and if we care to estimate the business which this oil creates—the amount of transportation by rail, the additions to our commerce, the thousands of hands and the millions of capital engaged in refining it, we shall not write down the entire region as humbug. But a very small per centage of those who were made so wealthy by the excitement of it, have retained their wealth. From one cause and another—by speculation or drink, or gambling, or broken banks—the greater part are about where they began; many, indeed, far worse. Suits almost without number have been brought for the recovery of moneys fraudulently obtained, and the only thing that prevents the commencement of others is the disagreeable certainty that the plaintiff could pay the costs. Many companies have allowed their lands to be sold for taxes, seemingly resolved to spend no more in this country. It certainly seems foolish to see property sacrificed in this manner, as there is no knowing where the next belt of oil will be discovered. Localities of production are constantly changing, and the farm abandoned to its fate to-day may be the land of promise to-morrow.....We learn the following details of the destructive fire which recently occurred at Pithole. The fire broke out in the engine house of well No. 10, Marine Oil company's tract on Hiner farm. The flames soon communicated fire to a tank near by, containing about 150 barrels of oil. The burning oil from this tank ran down the hill setting fire to the tanks, derricks, and engine house of the Sherwood well, No. 3; from thence down the hill to the derrick of No. 247, Holmden farm, where a dam was built which prevented the flames spreading further. The loss is estimated at from six to ten thousand dollars. The loss of Mr. Sherwood, at the Sherwood well, is estimated at five thousand dollars. The well was producing about one hundred barrels per day.

Canada.

A telegraphic dispatch, dated Petrolia, August 5th, states: There was an immense destruction of oil wells and oil by fire in this place on Saturday night. A man in charge of Thompson & Co.'s well set fire to one of their large tanks of oil by accident, while carrying a lantern in his hand. The fire at once communicated to the adjoining wells. Ten wells, with all their machinery, tanks, etc., are a total wreck. The loss in machinery is thirty thousand dollars, in tanks fifteen thousand dollars, and in oil over thirty-five thousand dollars. Over twenty-five acres are burned clean. The largest loss falls on the King Flowing Well company composed of Messrs. Noble, Marshall, Taylor and Thompson.

MISCELLANEOUS.

Semi Annual Review of the Mining Interests of the Pacific States and Territories.

The San Francisco *Mercantile Gazette* publishes the following half yearly review of mining operations on the Pacific coast which, notwithstanding its length, we give entire. The facts and figures contained in it, says the *Gazette*, demonstrate that it is not mere assertion to state that the mining interests of the Pacific coast were never in a more healthy progress of development than at present. The influence of the increasing product of our mines of gold and silver on the commercial and manufacturing interests of the world, has caused a correspondingly wide attention to their development, and, as a consequence, the mines are no longer left to the direction of the unskilled or ignorant; but many of them owned by capitalists abroad, has caused the highest intelligence of the age, in all countries, to be devoted to the study of the subject of extracting the metals from their ores, as well as to their influence on commerce and civilization. The results of this universal study have been most advantageous to the mining interests of the Pacific coast, causing the invention of machinery and the introduction of processes which have added twenty per cent. to the gross product during the period under review, as compared with the returns of but a few years since and at the same time attracting the most profound attention of the mighty leaders of commerce, statesmen and political economists, to the advantages California possesses as a base for supplying the precious metals for the Asiatic market, which can never be over supplied. The bullion trade of California, of which there no longer exists a doubt as to its permanence, is destined to effect nearly as great a change in the current of commerce between Europe and Asia, as resulted from the discovery of the passage round Cape Horn. It is not to be expected that the nation which has for centuries controlled this bullion trade, and through its influence, acquired possession of the fairest portions of that vast country, will surrender its prerogatives without a struggle. Nor is it reasonable to expect the full stream of this trade to flow to our shores, unless we provide suitable facilities for its accommodation. The establishment of a line of powerful steamers running between San Francisco, China and Japan, has given well-grounded cause for alarm to our potent rivals, who will not be slow in placing all possible impediments in the way to prevent the stream of this trade flowing hither, before its dimensions shall overwhelm them. Gold is as essential to the sustainment of commerce as is sunlight to maintain vigor in animal and vegetable life; and, as the more directly the rays of the sun reach the earth, the more vigorous and prolific are the fruits of the soil, so, precisely, the more direct the connection between the source of the great—the universally acknowledged vivifier of trade—gold, with the markets for its absorbtion, the more vigorous and thrifty that trade will become to the producers. It must not be considered that a brief reference to the bullion market is a digression in a review of the mining interests. On the contrary, one is inseparable from the other in any intelligent remarks on the subject. Gold, though generally accepted as a standard of value wherever the broad pinions of commerce have reached, is itself an article of commerce, subject to continual fluctuations in value, and as obedient to the laws of supply and demand as any other commodity. Consequently it is as necessary for the miner to be well informed on the condition of the bullion market, as it is for the farmer to be informed on the state of the grain market. The most absorbing subject of study among political economists and financiers of the present day, is to account for the extraordinary absorption of the precious metals in Asia. Absorbed in their own immediate affairs, the miners of the Pacific coast—the great producers of these metals—have not paid sufficient attention to this subject—one which so directly affects them. How few there are who realize the fact that a direct trade with Asia for their bullion would increase the value of the product of our mines upwards of two per cent., which at a fair estimate already reaches $100,000,000 annually, and is rapidly increasing. Two per cent. on such a sum would build railroads to all parts of the coast in a few years. All the gold and silver taken from the mines on this coast have found their way to Asia, though but little of it goes direct. The bulk of it is shipped first to the Atlantic States; thence to Europe, where it is bartered for manufactured goods and costly luxuries; thence it goes to Egypt and Turkey to pay for the European manufacturers' raw materials, and thence into China, India and Japan, through a myriad avenues—every stage of its progress to its ultimate destination involving costs which fall on its producer, because the very nature of bullion prevents any addition to its price, no matter what may be the cost of its production. The exports of bullion to Asia since the discovery of the mines in California have been enormous, including nearly the whole of the $1,000,000,000 found on this coast, as well as all obtained in Australia, Russia, Mexico, Brazil and Africa, and still the demand increases. The following figures, compiled from the British official reports, will convey some idea of the drain of bullion from Europe to Asia, and prove the importance of the trade: From January, 1853, to January 1867, the exports of bullion from Great Britain to Asia reached $86,374,690 in gold, and $562,611,040 in silver, a total of $642,988,740. From 1853 to 1867 the exports of bullion to Asia from ports in the Mediterranean reached $108,613,390 in gold, and $451,241,435 in silver, a total of $557,854,825, or $1,022,843,555 exported from these two points in Europe in less than sixteen years, more than one half of which must have been obtained on this coast—while the direct shipments to China and Japan from this coast during the ten years ending with 1866 reached $41,428,479. The question naturally presents itself, if so much has been shipped from here direct, why not more? The laws of trade have thus far prevented the extension of this direct exportation of bullion. But, as we have endeavored to explain above, these laws are about to undergo material changes, and California will ere long reap the advantages of her geographical position and her abundance of the precious metals in securing a large share of the direct trade in them with Asia. This "good time coming" has such a direct bearing on the mining interests of the whole Pacific coast, that we have given the above views of it in our semi-annual review of those interests.

PLACER MINING.—The severity of the weather, the effects of which were felt throughout the mining districts of this and the adjoining States and Territories during the first quarter of the present year, and so seriously impeded operations as to cause a marked reduction in the product of bullion, has been succeeded by an unusually propitious spring and summer—the lateness of the rains and snows furnishing the placer and hydraulic miners an abundant supply of water, which will enable them to protract their labors later in the season than usual, and thus increase the product of bullion from this important source. A number of valuable additions to the area of placer diggings have been made during the present season, the most extensive of which is located in Calaveras county, embracing a section of it about fifteen miles in length by about eight to nine miles in width, and extending from the vicinity of Chile Gulch to the valley of the San Joaquin. A large number of men are at present working in this new district wherever there is sufficient water to supply a rocker, who are generally well paid for their labor. When the ditch which is in progress to supply the district with water shall be completed, we expect to hear a good account from some of the gulches in this new locality, which prospects remarkably well, but cannot be worked with advantage without a good supply of water. Good placer diggings, though of limited extent, have recently been discovered in the lower portion of Nevada county. Extensive placers are also reported to have been discovered between the summits of the Sierra Nevadas, to the north of the Kearsage district, in Inyo county. Gentlemen who have recently returned from that section of the State, report these elevated placers as both rich and extensive, with abundance of free water during the greater portion of the summer, and great facilities for working. The placer mines in Arizona are attracting more attention of late. The increasing quantity of bullion obtained from them is the best evidence that they are being more extensively worked than heretofore. From the placer mining districts of Oregon, Idaho, Montana, Washington and British Columbia, the reports are exceedingly favorable. The receipts of bullion from all of them are larger the present than they have been during any previous season. Several well-equipped parties of experienced miners are on their way to the placer mines known to exist on the Stickeen river, and at other points in the territory recently purchased from Russia. Basing our calculations on the facts that the number of placer miners whose gold reaches San Francisco not being materially larger than it was at the date of our last semi annual review, while the product of bullion shows a marked increase, as will be perceived by reference to the table of receipts given below, we are inclined to believe that, as a general thing, this class of miners have done remarkably well during the period over which our notice extends, and have an exceedingly favorable prospect before them.

CEMENT MINES.—The peculiar character of the materials which form what are familiarly termed "table mountains"—immense hills, consisting of bodies of sand, clay and gravel, cemented to the hardness of concrete by the united action of lime and iron—which exist in nearly every county in the state that contains a portion of the foot hills, and are rich in gold wherever they are found, has called into existence a new class of mining, requiring machinery and processes for saving the gold altogether different to those in use in either placer or quartz mining. A very large portion of the gold at present collected is obtained from these cement mines. The present centres of activity of this branch of mining are Nevada, Placer, El Dorado, Butte and Calaveras counties; but the extraordinary and almost universal success which has attended every properly conducted effort to work them in those counties, has imparted a healthy confidence in the value of similar deposits in others. Expensive prospecting operations, to test the value of the cement in several counties, are now in active progress. The result is merely a matter of cost, endurance and energy. No reasonable doubt exists of ultimate success in nearly every instance. As many as seventy mills are at present engaged crushing this cement at various points in this state alone—in every place with large profit to the owners. These mills have heretofore usually been of the same construction as those used in crushing quartz, it being found necessary to crush both rocks and cement, as there were no means for separating them. Recently Captain Cox, an experienced mining engineer, has invented a machine which is found to work exceedingly well, which separates the larger rocks from the cement in which they are imbedded, and consequently obviates the necessity of crushing them, and thus saves three fourths of the expense, time and wear of machinery required in working cement in an ordinary quartz mill. As this process of separation does not entail an expense exceeding twenty five cents per ton, and the apparatus is of comparatively trifling cost, the invention assumes as much importance in this branch of mining as the hydraulic apparatus is superior to the sluice and tom in the ordinary washing processes. The value of this invention becomes apparent when it is stated that there are many miles of this auriferous cement yet untouched by the miner, while in the localities where it has been most extensively worked, but a trifling portion has been operated upon, though many millions of dollars have been obtained from it.

QUARTZ MINING.—The great improvements effected in the machinery and processes employed in this branch of mining, its recognized permanent character and the granting of patents to the mines by the Federal Government, have all tended to give it increased importance in the estimation of capitalists, and the work of development was never carried on to a greater extent than at present. As the quartz mines of California never appear in the list of those bought and sold at the stock boards, it is not an easy matter to make out a list of the sales effected. But we have good reasons for knowing that investments in quartz have been more numerous and larger during the past three months than for several years previously. Millions of eastern and European capital are now employed in the development of the quartz mines of this coast. The experience of the past, costly as it has been to many of these capitalists, has not been without its advantages. Profiting by this experience, they no longer make such investments without using proper precautions against deception and fraud. Trustworthy experts, whose experience and judgment have stood the test of years, are employed by every prudent capitalist to examine the mines in which they desire to invest, and none are trusted except such as are reported favorably by the experts. Under such a method of proceeding, it is safe to predict that money invested in developing the mines will be of incalculable benefit to the State, and will realize large profits for the parties directly interested. As heretofore, Nevada county continues the centre of attraction in this branch of mining, though recent discoveries and developments in Placer county bid fair to make that the richest quartz mining section of the State. Tuolumne county is also attracting increasing attention; so are several of the more northern counties. It is almost a matter of certainty that when the ledges in the counties embraced within what is considered the "auriferous belt," which includes all the foot-hills, shall be as thoroughly prospected as have been those in Nevada and Placer counties, they will be found equally as valuable and extensive. As it is generally conceded that, within a few years, quartz mines will be the chief, if not the only source of the precious metals in California, the importance of thoroughly developing this great branch of mining becomes a subject worthy of primary consideration. To give a list of the discoveries of quartz made since the commencement of 1867, or even to mention the names and localities of those of ascertained value, would extend our review beyond the limits intended. There is scarcely a county in the state that does not contain ledges that will pay for working now, or which will do so when labor and materials become cheaper. In the more southern tier of counties several new mills have recently been erected, and quite a number of new ledges opened with every prospect of success. From Kern, Tulare, Fresno and Mariposa counties, our correspondent informs us that increasing activity among quartz miners prevails, and the prospects are good for a profitable season's work. From the middle counties, embracing the most productive mines in the state, equally favorable advices are received, which are confirmed by the increasing proportion of the bullion receipts. So, also, in the northern counties, Plumas, Sierra, Butte, Siskiyou, Del Norte and Humboldt. The supply of bullion from these counties is the best possible evidence of the success of the miners at work within them. The quartz mines of Oregon, in Waldo and Josephine counties, are yielding largely. Reports from the mills in Idaho, Arizona and Montana are equally favorable, and

we think we are quite safe in predicting a yield of gold twenty per cent. larger in 1867 than was collected in 1866.

SILVER MINING.—The importance of this branch of mining in California has heretofore been so greatly eclipsed by the superior proportion of the product of the mines in Nevada, that it has not been usual to make a separate heading, or to pay special attention to the silver mines of California. Recent developments in Alpine, Sierra, Inyo and Mono counties have clearly demonstrated that these mines are of very great value. The proportions, richness and character of the ores recently discovered in the Tarshish and Washington mines in Alpine, in the Silver Sprout, Kearsarge and other mines in Inyo, and in the Warrior, Comanche, Wilcox and other mines in Sierra county, afford illustrations of the increasing importance of this branch of mining in this State. In Nevada, as we are pleased to learn, the mines on the great Comstock lode were never in a more prosperous condition than at present. With improved processes for saving the metals and great reduction in the expense of mines and mills, the dividends paid by the companies working this great lode, during the past six months, have been larger, in proportion to the value of their stocks, than have ever been paid before during a similar period, and the prospects are that this state of affairs will be still further improved before the close of the year. The mines at Reese river, Highbridge, Belmont, Pahranagat and other districts in that state are increasing in productiveness, and the quantity of bullion shipped is steadily increasing its proportion, already greatly exceeding the shipments of the first six months of 1866. An interesting fact connected with the development of the resources of the Silver State is presented in the remarkable richness of the Occidental mine located two miles east of the Comstock, on a separate and distinct lode, differing from it in every particular except in the richness of its ore. This mine has produced $350,000 worth of bullion in little more than a year, and is at present yielding upwards of $20,000 worth per month. This remarkable success demonstrates that the one ledge theory, which occupied so much attention a few years back, is not the true one, and proves that Nevada contains much greater stores of metallic wealth than those imagine who estimate her resources by the product of the Comstock lode, and furnishes another illustration of the success which sometimes attends those who, placing no faith in theories, depend on their own judgment and experience in conducting their mining operations. The silver mines in Idaho, as we learn through various sources, are turning out considerable bullion, their value increasing as the work of development progresses. The Poorman and adjacent mines are unquestionably among the most valuable silver mines on this coast. Taking a broad view of the mining field on the Pacific, it affords us much pleasure to state that, as a general thing, the miners engaged in the gold and silver branches of mining never had a more brilliant prospect before them than they have at present. The profits from their labor, all things considered, were never larger than at present, while the returns on the capital invested in this branch of mining were never as large and certain as at present, and there are abundant reasons for believing that this state of affairs will continue for years.

COPPER MINING.—It is much to be regretted that we cannot give as favorable a report of the copper mining interest as we have of gold and silver. A variety of causes, which no human foresight could have averted, have produced an almost total stagnation in this important branch of mining, involving in ruin many of those most extensively engaged in the business. The unprecedentedly low price of copper in the Atlantic and European markets, and the extraordinary high price of freight, consequent on the great demand for shipping to carry grain, have almost closed the copper miners out of a market. In place of shipping 50,000 to 75,000 tons of ore, as it was estimated they would have done, the total exports have not exceeded 20,000 tons, a considerable portion of which did not realize the cost and charges when placed on the market, owing to continual depression in prices. The valuable mines at Copperopolis—Campo Seco—those in Mariposa and Fresno counties, and at Williams' Fork of Colorado, have all stopped work. The only ore coming to market are a few tons from the mines in Del Norte county, and these must soon stop also, as it will not pay expenses. Unless something can be done to increase the value of copper ores, or to decrease the expense of its extraction and transportation, but little more copper ore will be taken from the mines on this coast for the present.

COAL MINING.—The developments in this important branch of mining progresses with increasing activity. The coal obtained from the mines at Mount Diablo improves considerably as the depth of the works increases and facilities for mining improve, the consumption keeping pace with the supply. The Bellingham Bay mines, so long closed in consequence of taking fire, which required flooding of the mines to extinguish, have been re-opened within the past few months, and several cargoes of this excellent coal placed on the market. The heavy receipts of foreign and eastern coal, and the competition between producers and importers, while affording the public the benefit of low prices, have not been advantageous to the coal mining interest, the decline in prices of all kinds of coal offering but little inducement to capital to invest in developing new mines. It is generally believed that valuable mines of a very superior quality of coal exists in the newly acquired territory of Alaska. It is a fact, long known among those interested in the coal business on this coast, that the quality of the coal improves the further north it is obtained. A mine of good quality of anthracite is known to exist on Queen Charlotte's Island, but a few miles from the mainland which has come into our possession. There are few objects of greater importance to the future welfare of California than the discovery of an extensive deposit of good coal. If, as it is reported, such a deposit exists in the territory just purchased by the Federal Government, it would be worth the whole amount of the purchase money. The increasing importance of a supply of good coal has caused an extensive search for it, and quite a number of places have been discovered along the coast where a fair quality of coal can be conveniently obtained; but, as we have already stated, the low prices now ruling do not encourage their development. Under a more favorable condition of affairs, the necessary capital and enterprise will be available for obtaining a supply from these sources when required.

PETROLEUM.—This valuable branch of the mineral resources of California is in nearly as unfavorable a condition as that of copper mining. The costs of transportation and packages, high price of labor, and the low price at which imported oil is selling, have made the preparation of oil from California petroleum an unprofitable business. It has, consequently, been nearly abandoned for the present. Sufficient has been done towards the development of this important source of wealth to demonstrate that California does possess petroleum from which a good illuminating oil can be made; but as such oil, for the present, can be imported cheaper than it can be made here, its production is not an absolute necessity, but can be accomplished whenever it becomes necessary or profitable. Should the experiments now in progress for using crude petroleum for fuel on board ocean steamers prove successful, the oil pits and wells so numerous along this coast will become of additional importance, as the steamers making the longest voyages traverse the Pacific Ocean, and can be supplied with such fuel with extraordinary facility.

QUICKSILVER.—The arrangements effected by the parties who have control of the chief mines of this metal on this coast, have a tendency to restrict the production to the limits of the demand, consequently there is but little of interest to be said in relation to this metal. The mines and the works of the company which owns them could produce treble the quantity produced at present, but as the additional supply would tend to reduce prices, they consider it more to their advantage to keep down the supply to keep up prices. The extent of the export of this metal will be found under the head of exports, in another department of this paper. The home consumption has been scarcely as large as during the first six months of 1866, the greater care of its use in the mills causing a marked saving and corresponding decrease in consumption.

BORAX.—The preparation of this valuable mineral for the New York market, affords a lucrative business for the company owning the chief source of supply. The exports to New York are steadily increasing. The consumption on this coast is so exceedingly limited as to be of comparatively little importance; and being a substance, the cheapness of which would not induce extra consumption, the company who prepare it prudently confine their operations to supplying the requirements of the business. They could produce it in almost unlimited quantities, if necessary. In order to test the tone of the English market, and to find an outlet for their products, the company have sent a few cases of their best material to London. As the company have recently introduced a new process, by which an absolutely pure bi-borate of soda is obtained, when it is notorious that all of that article in the English markets is more or less adulterated, and the pure article can be supplied as cheaply as the inferior, it is probable California Borax will form an important article of export to that country, as soon as its superiority becomes known.

SULPHUR.—The increasing demand for sulphur, for the manufacture of acids, gunpowder, etc., has caused much attention to be paid to methods for economically purifying the immense beds of crude materials found at various points in this State and Nevada. There are several extensive works now in operation for this purpose, which collectively turn out nearly 25 tons of pure sulphur per week, which but slightly exceeds the present demand. If the experiment made in sending 30 tons of California sulphur to the Eastern market, turns out successfully, and it will pay to ship there, California can make sulphur sufficient to supply the whole American continent.

In glancing over the above brief review of the mining interests of the Pacific, for the past half year, it will be perceived that there are no symptoms of decline or exhaustion in any branch. Where success has failed to attend the labor and enterprise of the miners, such failure has not been the result of exhaustion, but of causes which will probably be removed in future, as labor, materials, and transportation become more available and cheaper. With the exception of copper and petroleum, every branch of mining is vigorously prosperous and expanding, and these are only temporarily under a cloud. No one can doubt that our copper mines, which, while but prospecting, produced richer ores than are obtained from the oldest mines in the world, and in unlimited abundance, will sooner or later obtain that consideration their value commands; while our petroleum springs will not cease flowing because capital refuses to recognise their value and importance. There will be a great reaction in this business within the next year or two, when those who have devoted their time and money to developing these resources will reap the reward their enterprise deserves.....The same paper says: Our total exports of treasure for the first six months of the past three years have been as follows: 1867, $20,804,994; 1866, $23,409,100; 1865, $21,010,497. The monthly average since Jan. 1st, is $3,470,000, against $3,900,000 for the same time in 1866, and $3,500,000 in 1865. The large figures for 1866 were due to the heavy shipments during the second quarter to meet financial difficulties in England. Our exports of treasure in detail for the first six months of 1867, as compared with the corresponding period of the two previous years, are as follows:

	1867.	1866.	1865.
New York	$12,276,896	$15,026,631	$6,993,026
England	3,055,829	3,405,829	9,771,132
France	526,899	467,898	.....
China	3,833,400	3,745,088	3,743,979
Japan	36,769	101,890	8,917
Panama	174,000	188,287	235,000
Mexico	23,000	5,000	132,457
Hawaiian Islands	2,300	82,635	12,420
Phillippine Islands	.....	.....	40,421
Society Islands	500	.....	5,500
Chile	723,451	239,995	50,000
Central America	101,950	45,847	17,645
British Columbia	50,000	100,000	.....
Totals	$20,804,994	$23,409,100	$21,010,497

The annexed table shows the export of quicksilver from San Francisco and its destination for the six months ending June 30, 1867:

New York, flasks	1,500	$45,000
Great Britain	1,500	56,550
British Columbia	12	552
Mexico	5,924	194,096
China	1,500	52,500
Peru	2,000	63,750
Australia	250	9,375
Central America	30	1,377
First six months, 1867	12,716	$423,200
First six months, 1866	18,427	676,302
Decrease this year	5,711	$253,102

Exports of English Iron and Steel to the United States.

From the last report of the British Board of Trade, we compile the following statement of the exports of English iron and steel to the United States, during the first four months of the present year, as compared with the quantity exported during the corresponding period of 1866:

	1866.	1867.
Iron, pig and puddled (tons)	34,412	37,915
Railroad of all sorts	25,436	59,661
Bar, angle, bolt, and rod	24,332	14,811
Hoops, sheets, and boiler plates	10,147	6,836
Others, wrought	4,192	2,585
Castings	301	153
Total	98,811	121,961
Steel, unwrought	6,980	7,382

—*Bulletin American Iron and Steel Association.*

The Divining Rod.

S. Baring Gould, M. A., has published a book, entitled "Curious Myths of the Middle Ages," in which he gives an article upon the divining rod which, says the Philadelphia *Press*, is full of interest, and treats of the power, claimed by some persons, of being able, by the aid of a forked hazel rod which, being held loosely, inclines to the earth, to discover the seat of spring water or hidden treasure. The whole story of Jacques Aymar, (the date is 1692, the scene is in France,) is given here to exemplify this mysterious power, and concludes with his *expose* and downfall. To this day there are persons in the rural parts of England who are employed to use the divining rod for the discovery of the best place wherein to work a well. It will be remembered that, in "The Antiquary," Scott makes Dousterswivel pretend to find buried treasure in the ruins of St. Ruth, and there is a very entertaining and instructive article in an early number of the *Quarterly Review*, most of the materials of which were supplied by Sir Walter. Mr. Gould thus speaks of the modern use of the divining rod: The rod is still employed, I have heard it asserted, by Cornish miners, but I have never been able to ascertain that such is really the case. The mining captains whom I have questioned invariably repudiated all knowledge of its use. In Wiltshire, however, it is still employed for the purpose of detecting water; and the following extract from a letter I have just received will show that it is still in vogue on the continent. "I believe the use of the divining rod for discovering springs of water has, by no means, been confined to mediæval times, for I was personally acquainted with a lady, now deceased, who has successfully practiced with it in this way. She was a clever and accomplished woman, Scotch by birth and education, by no means credulous, possibly a little imaginative, for she wrote not unsuccessfully, and of a remarkably open and straightforward disposition. Captain C——, her husband, had a large estate in Holstein, near Lubeck, supporting a considerable population, and whether for the wants of the people or for the improvement of the land, it now and then happened that an additional well was needed. On one of these occasions a man was sent for who made a regular profession of finding water by the divining rod. There happened to be a large party staying at the house, and the whole party turned out to see the fun. The rod gave indications in the usual way, and water was ultimately found at the spot. Mrs. C——, utterly skeptical, took the rod into her own hands to make the experiment, believing that she would prove the man an impostor, and she said afterwards she was never more frightened in her life than when it began to move, on her walking over the spring. Several other gentlemen and ladies tried it, but it was quite inactive in their hands. 'Well,' said the host to his wife, 'we shall have no occasion to send for the man again, as you are such an adept.' Some months after this, water was wanted in another part of the estate, and it occurred to Mrs. C—— that she would use the rod again. After some trials it again gave decided indications, and a well was begun and carried down a very considerable depth. At last she began to shrink from incurring more expense, but the laborers had implicit faith, and begged to be allowed to persevere. Very soon the water burst up with such force that the men escaped with difficulty, and this proved afterwards the most unfailing spring for miles around."

Metallurgical Product of Europe.

The *Moniteur des Interets Materiels* sums up the metallurgical, etc., production of Europe in 1865 as follows:

Country.	Pig.	Steel.	Copper.	Zinc.
Great Britain, Tons.	4,500,000	1,250	4,850	2,150
France	1,225,000	30,000	2,350	250
Prussia	515,000	33,250	3,150	58,000
Belgium	362,500	4,000	1,950	41,300
Austria	337,500	21,250	2,690	1,350
Russia	300,000	5,000	5,150	
Sweden	225,000	6,500	2,450	1,245
Norway	25,000			
German States	212,500	1,750	250	50
Italy	37,500	750	350	400
Spain	60,000	500	3,600	1,850
Denmark	15,000			
Switzerland				100
Poland				8,300
Totals	7,815,000	174,250	36,790	114,995

The production of lead, tin, antimony, arsenic and sulphur in Europe in 1865 was as follows:

Country	Lead.	Tin	Antim'y.	Arsenic	Sulphur.
Great Britain, Tons,	69,000	8,450	.....	.....	.....
France	41,000	.....	505	.....	.....
Prussia	20,150	.....	60	245	400
Belgium	5,350	.....	.....	.....	300
Austria	7,350	46	340	50	1,000
Russia	750	24	.....	.....	.....
German States	12,500	167½	15	240	.....
Italy	1,800	.....	50	....	315,000
Spain	84,750	12½	60	40	3,900
Other countries	.....	.....	.....	.....	300
Totals	242,650	8,700	1,030	575	321,500

Expense of Running Peat Works.

The laborers employed, and the cost of labor for manufacturing peat fuel will doubtless be an item of interest to those investigating the subject. At the works of the Boston Peat Company, at Lexington, Mass., they have been as follows, for 100 tons crude peat per day: Four men to cut peat from the bog and load it into cars; one boy, one horse and two cars to haul (on a tramway) from the bog to the mill; one man to feed into the mill; one man to put moulds into the mill; two men to take moulds from the mill; one boy, one horse and three trucks to remove the moulds (filled with peat) to the spreading ground; two men on the spreading ground to empty the moulds; one boy to receive the moulds as they come back from the spreading ground; one engineer and one superintendent. This comprises twelve men, three boys and two horses.

Ten of the men are paid	$1 75	per day	$17 50
The engineer is paid	2 50	"	2 50
The superintendent is paid	3 00	"	3 00
The three boys are paid	0 75	"	2 25
For the two horses we pay	1 25	"	2 50
			$27 75

In addition to this, the blocks of peat require to be "haked" or turned once in a while on the spreading ground, which is done by boys: and the dry fuel is to be gathered up and placed under shelter, which can easily be done by two men: and occasionally an extra man or boy may be wanted about the premises—all of which is considered to be more than covered by $10 per day..... 10 00

Giving as a total cost for labor on each day's yield of, say 25 tons or more, of merchantable fuel $37 75

The cost as above stated, is for the product of one set of machinery; but, where several machines are to be operated in one establishment, and the business is to be conducted on an extensive scale, the cost *pro rata* will be very much reduced—as one man can easily superintend several machines—the laborers generally can be employed to better advantage, and numerous mechanical appliances to save manual labor and expedite the operations, which it would not be advisable to construct where a single mahine only was to be run, may be economically introduced on more extensive works: and in this manner it is quite probable that the expense may be reduced to one dollar and twenty-five cents per ton, and some have estimated as low as one dollar per ton. The profit of such an establishment will therefore be largely in excess of smaller works.

MARKET REVIEW.

FRIDAY EVENING.

Gold and Silver Stocks.—At first board Consolidated Gregory sold regular at $5 15@5 50; s.3, $5 05@5 15; b.3,, $5 20; b.10, $5 40; Edge Hill Mining, $2 25; Midas Silver, $2 05@2 10; s.3, same; Reynolds, 5c; New York and El Dorado, b.30, $2 50; s.3, $2 45; Harman G. & S., $7 50@7 60; Quartz Hill, b.10 and b 30, $1 90; Smith & Parmelee, $5@5 05; s 3, $5 05. At second call Columbia G. & S. sold, s.3, at $1 10; Corydon, s.3, $1 05; New York Gold, $1 10; New York and Eldorado, regular, $2 45; Quartz Hill, regular, $1 85.

	August 9. Offered.	Asked.	August 2. Offered.	Asked.
Alameda	1 00	....	1 55	8 00
American Flag	75	85	1 05	1 15
Atlantic and Pacific	1 25	....	1 40	2 25
Bates & Baxter Gold	50	1 10	1 15	1 50
Benton Gold	90	1 60	1 10	1 15
Bobtail Gold	....	....	....	3 00
Boscobel Silver	....	....	....	....
Bullion Consolidated	....	....	....	1 00
Burroughs Gold	....	....	....	....
Central Gold	....	....	....	....
Crozier Gold	....	....	....	....
Columbian G. & S.	1 10	1 25	1 10	1 20
Consolidated Colorado	....	....	....	....
Consolidated Gregory	5 15	5 20	6 70	6 85
Corydon	1 05	1 10	1 20	1 25
Des Moines Gold	....	....	....	....
Downieville Gold	2	7	....	....
Eagle	....	....	....	....
Edgehill Mining	2 20	2 25	....	....
Gilpin Gold	....	....	....	....
Gold Hill	....	....	....	4 00
Gunnell Gold	2 55	2 70	3 00	3 20
Gunnell Union	10	25	10	25
Grass Valley	....	....	....	....
Harman G. & S	7 50	7 70	....	....
Holman	11	....	11	....
Hope Gold	10	40	17	40
Keystone Silver	....	....	....	....
Kipp & Buell Gold	40	....	45	50
La Crosse Gold	75	85	80	85
Liebig	....	....	....	....
Liberty Gold	....	7	5	7
Manhattan	....	105 00	....	....
Midas	2 10	2 20	2 00	2 05
Montana Gold	31	35	25	45
New York	1 05	1 10	1 20	1 30
New York & El Dorado	2 45	2 50	2 35	2 40
Nye Gold	....	5	6	8
Owyhee Mining	....	....	55 00	....
Ohio & Colorado G. & S.	....	....	....	....
Peoplo's G. & S. of Cal	....	45	....	50
Quartz Hill	1 85	1 90	2 05	2 15
Reynolds Gold	....	5	....	8
Rocky Mountain Gold	1 40	1 60	1 70	1 80
Seaver Gold	....	13 50	11 90	13 50
Smith & Parmelee Gold	5 05	5 15	6 05	6 15
Sensenderfer	....	12 00	13 40	13 75
Symonds Fork	50	75	50	1 00
Texas Gold	9	....	7	20
Twin River Silver	....	....	25 00	....
Vandeburg	....	....	....	75
Yellow Jacket Gold	....	50	....	50

Copper Stocks.—We notice commendable activity in Davidson, which sold at first board as follows: b 30, $2 05; s.3 and s.30, $2. At second call same stock sold, s 60 and s 3, $2.

	August 2 OFFERED.	ASKED.	August 9. OFFERED.	ASKED.
Caledonia	....	10 00	....	10 00
Canada Copper	5	25	....	30
Central Copper	21 50	....	21 50	....
Charter Oak Copper	....	....	....	7 00
Davidson Copper	2 00	2 25	2 00	2 05
Hilton Copper	....	1 00	....	1 00
Hancock	....	....	6 50	7 50
Evergreen B. Copper	....	....	....	....
Isle Royale	....	4 00	....	5 50
Knowlton	....	4 00	....	4 00
Rockland Copper	....	8 00	....	7 00

Petroleum Stocks.

	August 2. Offered.	Asked.	August 9 Offered.	Asked.
Benuchoff Run	2 50	3 00	2 50	2 80
Buchanan Farm	20	25	20	....
Bemuchoff Mutual	....	....	....	....
Central	1 00	1 25	1 00	1 15
Cherry Run Special	....	....	....	....
Clinton Oil	80	2 00	....	1 50
Excelsior	10	25	....	15
First National	....	....	....	....
Manhattan	10	15	....	15
N. Y. and Alleghany	....	....	3 50	4 00
Pit Hole Creek	25	50	25	50
Rynd Farm	15	25	12	15
Second National	....	....	1	25
Rathbone Oil Tract Co	....	....	....	....
Rynd Farm	15	25	12	....
United Pet. Farms	10	30	10	20
United States	3 65	3 75	....	4 00
Union	1 30	....	....	....

Miscellaneous Stocks.—Walkill Lead, 48@51; Rutland Marble, $7; Mariposa Pref, 21; Delaware & Hudson Canal, 152; Quicksilver, 32; Reading Railroad, b.3, 104⅞; Pacific Mail S. S. Co., 145¼; West U. Telegraph, 45¼@45⅝; Adams Express, $72 50@73; Wells, Fargo & Co, $66 50@67; Merchants' Union Express, $15 50@17; or 30c paid.

Government Stocks.—Business light.

U. S 6s, 1881, reg	111 @111⅛
U. S 6s, 1881, coupon	111⅝@112
U. S. 6s, 5-20s, 1862, coupon	113⅜@113⅞
U. S. 6s, 5-20s, 1864, coupon	110⅛@110⅜
U. S. 6s, 5-20s, 1865, coupon	110⅝@111
U. S. 6s, 5-20s, July, 1865, coupon	108⅜@108⅞
U. S. 5s, 1871, reg	— @120
U. S. 5s, 1871, coupon	119⅛@ —
U. S. 5s, 1874, coupon	110⅛@ —
U. S. 10-40s, 10-40s, reg	98⅛@ —
U. S. 10-40s, coupon	103 @103⅝
U. S. 7-30s, August, large	107⅛@108
U. S. 7-30s, June, large	107⅛@107⅜
U. S. 7-30s, July, large	107⅜@107⅝

Foreign Exchange—The market is steady and quiet, the transactions being unimportant. Bankers' bills on England at 60 days were quoted at 109⅝@109¾; at 3 days, 110½@110¾; commercial bills, 108⅛@109. Bills on Paris at 60 days, 5 13¾@5 15; at 3 days, 5 11¼@5 12½. Other continental bills were rated thus:

	Bankers'.	Commercial.
Antwerp	5.13¾@ 5.15	5 17½@5 15
Hamburg, (bankers')	36⅛@ 36¼	35⅞@ 36
Amsterdam, (bankers')	41 @ —	40⅜@ 41
Frankfort, (bankers')	40⅞@ 41	40⅝@ 40⅜
Bremen, (bankers')	78¼@ 78½	77⅝@ 78
Berlin, (bankers')	72 @ 72⅛	71½@ 71⅝

Gold.—The Gold market opened strong, selling at the Board at 140¾.

Copper—The sales foot up since our last to some 1,600,000 lbs. Detroit, 26c; Portage Lake, 25½c; Baltimore, 25, immediate delivery, and ¼@½ more for late August delivery.

Iron—The market is quite active, and prices must advance from $1 to $3, according to quality. Sales for the week foot up about 2,500 tons, mostly of No. 2. We quote prices from yard, American No. 1, 44@44½c; No. 2, ex. 40c. Scotch is in moderate demand at about 42½@43c; Gartsherrie, 44¼. Wm. Gothout reports as follows: Swedish Iron, $155@165; common, $90@95; refined, $100@105; band, $132½; horseshoe, $127½; rods, 3-16 to ⅝, $165@105; ovals, ⅜ to 1½, $165@127½; nail rods, 9@10¾c.; hoop, ⅜ to 2, $192½@137½; scroll, $132½@180.

Lead.—The market has been quiet but firm, $6½@6¾ for ordinary soft, White Lead brand, 6⅞.

Tin.—Sales have been light at about our last quotations. We note the sale of 20 tons English at 33¼. We quote Straits 25c, gold; English, 23¼@23½c, gold; Banca, 26¾@27, gold.

Tin Plates. $9 25@9 50; I. C. Chl., $7 50@8 50, Coke, with an upward tendo

Spelter has been quiet at 6⅜@6¾c gold.

Petroleum is quiet. Crude at 13½c@14c, in bulk, and 19c in bbls. Refin bond, at 29½@30c for standard white,

THE SLATE TRADE.

NEW YORK, August 9, 1867

Roofing slate continues moderately active, with some enquiry from the South. Manufactured slates are in demand with some briskness. We learn that Mr. Hillburn has sold the Keller slate quarry, in Bushkill township, Pa., consisting of thirty-seven acres of land, owned by himself and Mr. Joseph Keller, to a gentleman in this city for $100,000.

Roofing Slate.

Vermont purple,	1st	quality, per	square	$11 00@12 00
" "	2d	"	"	10 00@11 00
" green,	1st	"	"	11 50@12 50
" "	2d	"	"	10 50@11 50
" red,	1st	"	"	12 50@13 50
" "	2d	"	"	11 50@12 50
Pa. bl'k & d'k blue,	1st	"	"	10 50@11 50
" "	2d	"	"	9 50@10 50

PRICES DELIVERED. PER SQUARE

CHICAGO.—Vermont purple and green,		1st qual		$14 00@15 00
" " "	"	"	2d "	13 00@14 00
" " "	red	"	1st "	15 00@16 00
" " "	"	"	2d "	14 00@15 00
Penn black		"	1st "	15 50@16 50
"		"	2d "	14 50@15 50

BUFFALO.—$2 or $3 lower than Chicago.
CLEVELAND.—$1 higher than Buffalo.
CINCINNATI.—50 cents higher than Cleveland.
NEW ORLEANS.—$19@20 per square.
CHARLESTON, S. C.—$15@16 per square.

[From our Special Correspondent.]

BUFFALO, August 5, 1867.

The demand for roofing slate is not as active as it has been. The feeling among roofers is that there may be a decline in the present high prices. The fact that all other merchandise is tending downward, and the fact of an excellent crop strengthens this belief, and they cannot see why slate should not be affected. If these anticipations are not realized this Fall, there seems little doubt but that the prices next Spring must be much lower than they are at present. The power which the makers and hands at the quarries possess of compelling the payment of wages which are high, if not exhorbitant, must be broken. The high price of slate is seriously injuring its popularity, and slate-roofers are compelled, in competition with other roofers, to do work for such a small profit that, in some instances, they are disposing of this business and entering some more lucrative employment. It is only recently that slate has obtained its popularity, and then it could be put on the roof at a figure that compared very favorably with other roofing material; but when the cost is augmented by exorbitant wages at the quarries to double or more its former cost, it impedes the advance of its popularity and makes it only accessible to the more wealthy class of builders. There can be no doubt, however, but that the lower cost of the necessaries of life will compel a reduction of wages at the quarries, and a reduction of the price of slate.

Dealers are selling best Purple and Green Vermont slate as follows:

On cars or boat at Buffalo	$11 50	per square.
Delivered in Cleveland	12 50	"
" Dayton	13 00	"
" Cincinnati	13 50	"
" Indianapolis	13 50	"
" Chicago	13 50	"
" St. Louis	14 00	"
" Louisville	14 50	"
" Detroit and Toledo	12 75	"

Intermediate, 75 cents per square less.
Red, $4 per square more.
New York Red, same as Purple.

THE COAL TRADE.

NEW YORK, Aug. 9, 1867.

During the early part of the week there was some inquiry for coals, but during the last three days all evidences of trade have passed away. The great quantity of coal sold at this port for steamer use necessarily keeps up activity, but dealers generally complain of a dull and unprofitable business. The last decline at the Scranton sale has well nigh discouraged Schuylkill dealers, and this week we learn of the stoppage of many more collieries in the Schuylkill district. There is no particular disposition among certain classes here to have coal advance. Commission men are making fair profits, and dealers having large contracts to fulfill, "bear" the market. The great increase in shipments by the Scranton and Pittston Companies supplies the deficiency for the Schuylkill district, and prices favor the buyer.

Freights are easy and unchanged, the supply of boats being somewhat in excess.

The following Table shows the quantity of Coal shipped over the principal roads for the week ending August 3, 1867, compared with that shipped the same time last year.

	1866. WEEK.	TOTAL.	1867. WEEK.	TOTAL.	DECREASE.
Phil. & Reading R.R.	93,982	2,244,526	82,128	1,928,935	315,591
Schuylkill Canal	36,882	743,846	28,733	541,726	201,761
Lehigh Val. R. R	46,853	1,122,135	46,985	1,196,594	74,459
Lehigh Canal	34,443	496,463	33,615	468,476	27,997
Del. & Hudson	36,285	709,943	37,448	692,810	17,133
Scranton North	9,309	244,187	8,473	238,390	5,797
Scranton South	22,793	615,445	23,874	751,389	135,944
Penn'a. Coal Co. Rail	17,309	144,773	20,037	458,302	313,529
" " Canal	591	12,243	589	10,963	1,280
Wyoming North	.....	.....	.....	.....	.....
Wyoming South	.....	218,801	16,203	127,647	91,154
Shamokin	16,128	325,720	14,841	285,977	39,743
Trevorton	1,509	30,650	1,588	36,071	5,421
Short Mountain	3,202	42,275	2,752	37,250	5,025
L. V. Co	2,487	31,743	1,704	33,827	2,084
Broad Top	.....	159,117	3,969	137,763	21,354
Williamsto'n	2,074	22,200	2,001	51,550	26,399
Total	.....	6,163,967	324,940	5,997,670	.....
1867	.....	5,997,670	.....	.....	.....
Decrease	.....	166,297	.....	.....	.....

Lehigh and Mahanoy Coal Trade,

For week ending August 3, 1867.

NAMES OF SHIPPERS.	WEEK.	TOTAL.
Trenton Coal Co	.....	1,794 02
Mount Etna	.....	43 04
Mahanoy Coal Co	87 06	10,587 07
Delano Colliery	361 02	32,292 07
Glendon Coal Co	25 14	12,797 07
Rathburn, Stearns & Co	.....	24,045 11
E. S. Silliman	2,072 06	65,463 10
McNeal Coal & Iron Co	2,044 16	62,195 19
Knickerbocker Coal Co	1,118 18	33,664 09
Thomas Coal Co	1,169 19	19,162 16
Williams & Herring	76 15	8,961 03
Shamokin Valley Coal Co	368 19	2,213 19
New Boston	875 14	9,875 05
Other shippers	.....	15 11
Total	8,202 09	283,112 10
Corresponding week last year	13,013 08	221,431 12
Increase	.....	61,680 18
Decrease	4,801 19	.....

Schuylkill Coal Trade.

BY RAILROAD & CANAL, FOR WEEK ENDING AUGUST 8, 1867.

	Railroad.	Canal.
St. Clair	27,013	.....
Port Carbon	6,028	.....
Pottsville	186	.....
Schuylkill Haven	15,146	.....
Auburn	3,927	.....
Port Clinton	9,253	.....
Total for week	61,553	24,684
Previously this year	1,919,404	541,722
Total	1,980,957	566,406

Lehigh Coal Trade.

SHIPPED FOR THE WEEK ENDING AUGUST 3, 1867.

SHIPPERS.	CANAL. Week. Tons.	CANAL. Total. Tons.	RAILROAD. Week Tons.	RAILROAD. Total Tons.
FROM MAUCH CHUNK.				
Lehigh Coal & Navigation Co	....	....	....	....
Summit Mines	....	....	....	....
Room Run Mines	8,936	162,551	....	....
John Laubach & Co	....	1,313	....	....
Other Shippers	....	352	....	....
Total	8,936	164,217	....	....
FROM B. M. REGION.				
John Connery	....	....	....	1,534
W. T. Carter & Co. (Coleraine)	833	4,408	1,356	54,286
Spring Mountain Coal Co	487	1,152	2,385	84,861
Thomas Hull & Co. (N. Y. & Lehigh Co)	189	6,012	2,752	61,791
Honey Brook Coal Co	1,774	16,847	3,512	87,985
German Pennsylvania Coal Co	263	5,088	761	23,513
Beaver Meadow (D. W.)	....	....	....	....
Other Shippers	....	....	5	89
Total	3,544	33,509	10,847	315,017
FROM MAHANOY REGION.				
McNeal Coal and Iron Co	279	3,183	1,572	59 077
Knickerbocker Authr. Coal Co	179	1,327	910	32,201
North Mahany Mines (Mahanoy Col. now B. & C.)	....	636	48	10,442
Delano do	....	1,048	267	31,103
Primrose Mines (Rathbun, Stearns & Co.)	....	....	....	24,242
Walter, Brothers & Co. (now Bedford & Cox)	....	82	....	....
Mount Etna Coal Co	....	....	....	58
Trenton Coal Co	....	184	....	1,609
Glendon Coal Co. (Glendon Colliery)	....	....	25	12,874
Thomas Coal Co	93	1,142	1,163	18,226
Williams & Herring	....	189	....	8,783
E. S Silliman	....	....	2,072	64 828
East Boston	....	....	....	505
New Boston Coal Co	....	....	875	9 873
Shamokin Coal Co	....	....	368	2,213
Other Shippers	....	....	....	95
Total	551	7,794	7,381	276,136
FROM HAZLETON REGION.				
A. Pardee & Co. (Hazleton)	2,586	35,888	4,253	73,805
G. B. Markle & Co. (Jeddo)	2,263	25,988	3,966	70,344
Wm. S. Halsey & Co. (Mt Pleasant)	202	2,682	329	3,964
Buck Mountain Coal Co	1,055	25,689	1,993	29,604
Sharpe, Weiss & Co. (Council Ridge)	1,284	16,358	1,860	44,360
Coxe, Brothers & Co. (Cross Creek)	466	5,359	457	10,550
Cheyvale Coal Co	1 671	18,525	2,634	38,475
Stout Coal Co	804	11,264	1,177	18,086
Harleigh Coal Co	1,127	8,525	1,457	20,928
Ashburton Coal Co	378	1,265	....	432
East Sugar Loaf	....	....	4 021	72,928
Woodside	....	....	....	....
Highland	748	6,188	807	9,117
Mount Hall	....	88	....	311
Other Shippers	....	....	....	10
Total	12 589	155,824	22,887	392.931
FROM WYOMING REGION.				
Newport Coal Co	....	3,533	....	783
Warrior Run Mining Co	....	2,056	....	5,414
Parish & Thomas	377	5 249	1 044	25,221
New Jersey Coal Co	287	3,652	215	10,492
Lehigh & Susquehanna Coal Co	....	2,937	....	11,249
Germania Coal Co	469	4,944	206	9,169
Franklin Coal Co	652	5,130	66	8,479
Audenried Impr'v't & Coal Co	128	4 149	320	5,516
Valley Coal Co	....	189	72	224
Wilkes Barre Coal and Iron Co	3,291	38,451	675	43,750
Baltimore Coal Co	821	11,667	859	27,831
Union Coal Co	546	4,903	98	7,652
Wyoming Coal & Transp'n Co	....	5,569	439	15,571
Everhart Coal Co	93	2,525	....	1,904
Morris & Essex Mutual	....	....	116	4,774
H. B. Hillman & Co	....	....	24	6,597
Bowkley, Price & Co	....	....	....	1,745
T F. Hunt & Co	....	....	....	774
U. Lehigh Coal Co	....	....	1,588	24 743
Mineral Springs	....	....	155	614
Other Shippers	695	5,702	....	....
Total	7,993	107,139	5 869	212,509
Grand Total	33,615	468,476	46,985	1,196,595
Total 1866	34,443	496,463	46,853	1,122,135
Decrease	828	27,997	....	....
Increase	....	....	132	74,459

RECAPITULATION.

RAILROAD.

	Forwarded East by Rail from Mauch Chunk.	Delivered at M. Chunk, and on line of road ab that point	Total by Rail.	Delivered at P. H Junction and Mauch Chunk for Canal	Total by Rail road and Canal
	Tons.	Tons.	Tons.	Tons.	Tons.
For the week	46.985	.....	46,985	.....	46.985
Cor'ng week last year	46,853	25	46,878	11,346	58,224
Previously this year	1,149,609	10,431	1,160,041	39,483	1,199,524
Total	1,196,594	10,431	1,207,026	39,483	1,246,510
Same time last year	1,122 135	608	1,122,744	149.049	1,271,793
Increase	74,459	9,823	84,282	.....	.....
Decrease	.....	.....	.....	109,565	25,283

CANAL.

	Week.	Season.
Total from Mauch Chunk	8,936	164,217
" B. M. Region	3,544	33,509
" From Mahanoy Region	551	7,794
" Hazleton Region	12,589	155,824
" Wyoming Region	7,993	107,139
Total	33,615	468,476
Same time last year	34,443	496 463
Increase	.....	.....
Decrease	828	27 997

Cumberland Coal Trade.

For the week ending August 3, 1867.

From the Alleganian.

COAL TRADE BY THE CANAL.—There were dispatched from the port of Cumberland, during the last week, 117 boats, laden with 13,039 08 tons of coal, forwarded by the following companies:

American Coal Co	3,758 16
Borden	1,629 15
Ceutral	3,427 06
Hampshire	1 329 00
Cumberland Coal and I. Co	2,251 02
Consolidation	643 09
Total	13,039 08

COAL TRADE BY RAILROAD.—Statement of Coal shipments over the Baltimore and Ohio Railroad for the week ending August 3, 1867:

From C. and P. R. R.	Tons.
Consolidation	2,695 03
American Company	1,352 08
Borden	1,106 05
From Eckart R. R.	Tons.
C. C. and I. C	62 17
Spruce Hill	.....
Blaen Avon	246 12
Total	5,463 05

From George's Creek via Piedmont.		Tons.
George's C. & I. Company		2,728 11
Central	do	1,183 00
Atlantic	do	1,034 18
Piedmont	do	105 19
Swanton	do	811 05
Barton	do	548 06
Potomac	do	471 04
George's C M	do	362 07
Franklin	do	997 08
Hampshire	do	1,267 01
Total		9,509 19

Statement of Coal transported over the Cumberland & Pennsylvania Railroad during the week ending July 27th, and for year:

	To Canal.	To B. & O. R. R.
For week	12,815 02	11,745 01
For year	182,964 11	310,072 00

During the corresponding period of 1866, there were delivered to the Baltimore & Ohio Railroad 318,647 14 tons, and to the Chesapeake & Ohio Canal 152,527 18 tons.

Prices of Coal by the Cargo.

[CORRECTED WEEKLY.]

At New York, August 9, 1867.

Schuylkill Red Ash, choice	$5 75@	$6 00
" Ordinary	5 25	5 50
" White Ash Lump	5 25	5 50
" Steamboat	5 25	5 50
" Broken	5 25	5 50
" Egg	5 25	5 50
" Stove	5 25	5 50
" Chestnut	4 00	4 25
Lehigh White Ash Lump	5 75	....
" Broken	5 50	....
" Egg	5 50	....
" Stove	5 75	....
" Chestnut	5 00	....
Wilkesbarre Lump	5 25	....
" Broken & Egg	5 50	....
" Stove	5 75	....
" Chestnut	5 25	....
Wyoming Lump	5 00	....
" Steamboat	5 25	....
" Stove	5 40	....
" Chestnut	4 75	....

SPECIAL COALS.

Dealers' Quotations.

Diamond Vein Red Ash, Schuylkill	6 00	....
Locust Dale White Ash, "	5 50	....
Honey Brook " " Lehigh	5 75	....
Harleigh " " "	5 75	....
Spring Mountain " "	5 75	....
Sugar Creek " " "	5 75	....
Ashburton " " "	5 75	....
Fulton White Ash	5 75	....
Stout	5 75	....
Old Company's " "	5 75	....
Buck Ridge " Shamokin	6 00	....
Henry Heils, E. Franklin, Lorberry	6 00	....
New England Red Ash	5 75	....
Broad Mountain	5 50	....
Wyoming	5 40	....
McNeal Co.	5 75	....
George's Creek (Balt.)	5 25	....
" " (Georgetown)	5 75	....
Locust Mountain (Repplier)	5 60	....
Duncan Red Ash "	6 50	....
Wilkesbarre Coal & Iron Co.	5 50	....
New Burgh Orrell Gas Coal	9 25	....
Despard Gas Coal	9 25	....

Dealers in these Coals may be found in our advertising columns.

At Philadelphia, August 10, 1867.

Lehigh Lump and Steamboat	$5 25@	.. ..
" Broken and Egg	5 25	.. ..
" Stove	5 25	.. ..
" Chestnut	4 00	.. ..
Schuylkill Red Ash Prepared	4 50	4 75
" Chestnut	3 00	.. ..
" White Ash Lump and Steamboat	4 25	.. ..
" Broken	4 25	.. ..
" Egg and Stove	4 25	.. ..
" Chestnut	3 15	.. ..
Locust Mt. Lump, and Steamboat	4 25	.. ..
" Broken	4 25	.. ..
" Prepared	4 25	.. ..
" Chestnut	3 00	.. ..
Lorberry Coal	4 50	.. ..
Shamokin	5 00	.. ..
Franklin, (Lykens Valley)	5 25	.. ..
Broad Top	5 00	.. ..

Scranton Coal at Elizabethport, August 8, 1867.

(Corrected weekly by D. L. & W. R. R. Co.)

Lump	$4 75@	— —
Steamer	4 75	— —
Grate	4 75	— —
Egg	4 75	— —
Stove	5 00	— —
Chestnut	4 50	— —

Prices for Pittston Coal at Newburgh, August 8, 1867.

(Corrected weekly by Penna. Coal Co.)

Lump, per ton of 2240 lbs	$5 05	.. ..
Steamer, " " "	5 15	.. ..
Grate " " "	5 15	.. ..
Egg " " "	5 15	.. ..
Stove " "	5 30	.. ..
Chestnut "	4 25	.. ..

70 cents additional to New York.

Lackawanna at Rondout, August 8, 1867.

(Average contract prices for year.)

Lump	5 00	@.. ..
Steamer	5 10	@.. ..
Grate	5 30	@.. ..
Egg	5 40	@.. ..
Stove	5 55	@.. ..
Chestnut	4 60	@.. ..
Pea	4 00	@.. ..

Lehigh Coal at Elizabethport, August 8, 1867.

Lump	5 75@	.. ..
Steamboat and Broken	5 50	— —
Egg	5 50	— —
Chestnut	5 00	— —
Stove	5 75	— —

At Baltimore, August 8, 1867.

Wilkesbarre & Pittston W. A	$5 25@	$5 50
Lykens Valley & Sunbury R. A	5 50	5 75
Shamokin W. or R. A.	5 50	6 00

George's Creek and Cumberland Coal.

Run of mine, f. o. b. at Locust Point at Georgetown ..... $5 00@ 5 25

Wilkesbarre Coal at Elizabethport, August 7, 1867.

(Corrected by Wilkesbarre Coal & Iron Co.)

Lump	5 00	.. ..
Steamer	5 25	.. ..
Broken	5 25	.. ..
Egg	5 00	.. ..
Stove	5 25	.. ..
Chestnut	4 50	.. ..

Prices of Provincial Coals.

[CORRECTED WEEKLY BY LOUIS J. BELLONI, JR., 43 PINE STREET.]

Duty $1.25 per ton.

Block House (on board)	$2 00	gold
Gowrie "	1 75	"
Lingan "	1 75	"
Sydney "	2 25	"
Pictou "	2 25	"
Little Glace Bay "	1 87½	"
International Co.'s "	1 75	"
Slack Coal, B. H., "	75	"
" L. G. B.,	1 00	"

Prices of Foreign Coals.

Duty $1.25 per ton.

Corrected weekly by PARMELEE BROS., 32 Pine Street, N. Y.

Liverpool Gas Caking	$10 00
" Cannel	13 00
" House "	16 00
" " Orrel	15 00

Per ton 2240 lbs.

PRICES FROM YARD:

Liverpool Orrell, screened	17 00@.. ..
" Cannel, "	20 00@22 00

per ton 2000 lbs. delivered.

Coal Freights.

(Corrected Weekly.)

From Baltimore.

To Philadelphia	$1 40@	1 50	Boston	2 25@	2 50
New York	2 10	— —	Sound Ports	2 25@	2 50
Washington	1 05	— —	Norfolk	1 00@	— —
Annapolis	75	— —	Richmond	1 30@	— —

From Port Richmond, Philadelphia.

Albany	1 40	— —	Nantucket	2 25	— —
Assonet	2 25	— —	Montreal	4 50	— —
Appanang	2 00	— —	New York	1 30	— —
Boston	2 25	— —	Newberryport	2 50	— —
" bridges	03	— —	Norwich & tow	2 00	— —
Braintree	2 50	— —	New London	2 00	— —
Bristol	2 00	— —	New Bedford	2 05	— —
Bath	2 50	— —	Newport	2 00	— —
Charlestown	2 25	— —	New Haven	1 75	— —
Chelsea	2 25	— —	Nepensett	2 25	— —
Cambridgeport	2 50	— —	Portsmouth	2 50	— —
" bridges	03	— —	Portland	2 25	— —
Cohassett Narrows	2 40	— —	Providence	2 00	— —
Commercial Point	2 25	— —	Pokeepsie	1 45	— —
Cambridge	2 25	— —	Pawtucket and Low	2 15	— —
Chatham	2 70	— —	Provincetown	2 40	— —
Dighton	2 10	— —	Perth Amboy	1 30	— —
Dorchester Point	2 25	— —	Quebec (gold)	1 50	— —
Davenport	2 30	— —	Quincy Point	2 25	— —
East Cambridge	2 25	— —	Rockport	2 40	— —
Edgarton	2 10	— —	Roxbury	2 50	— —
Fall River	2 00	— —	Rockland	2 30	— —
Fair Haven	2 10	— —	Saco	3 00	— —
Fredericksburg	1 65	— —	Sag Harbor	2 00	— —
Gloucester	2 40	— —	Salem	2 25	— —
Hudson	1 35	— —	Saugus	2 35	— —
Hartford	2 25	2 35	St. John (gold)	1 00	— —
Hyannis	2 25	— —	Somerset	2 00	— —
Hackensack	1 55	— —	Troy	1 45	— —
Ipswich	2 80	— —	Wickford	2 00	— —
Lynn	2 25	— —	Williamsburg	1 30	— —
Manchester and dis	2 40	— —	West Chester	1 50	— —
Milton	2 80	— —	wareham	2 00	— —
Middletown	2 30	— —	Yarmouth (gold)	1 50	— —
Marblehead	2 27	— —	Weatherfield	2 35	— —

From Newburgh.

River.	Co.'s Boats.		Eastern.		
Albany	50@	.. ..	Boston	1 80@	.. ..
Barrytown	35	.. ..	Bridgeport	1 12½	.. ..
Catskill	35	.. ..	Bristol	1 50	.. ..
Cold Spring	30	.. ..	Dighton	1 50	.. ..
Coeymans	45	.. ..	Fall River	1 45	.. ..
Coxsackie	40	.. ..	Mystic	1 30	.. ..
Fishkill Landing	20	.. ..	New Haven	1 12½	.. ..
Greenbush	50	.. ..	New London	1 30	.. ..
Haverstraw	45	.. ..	Newport	1 45	.. ..
Hudson	35	.. ..	Norwalk	1 12½	.. ..
New York	70	.. ..	Norwich	1 40	.. ..
Nyack	50	.. ..	Pawtucket	1 65	.. ..
Peekskill	40	.. ..	Providence	1 50	.. ..
Poughkeepsie	25	.. ..	Stamford	1 12½	.. ..
Rhinebeck	30	.. ..	Stonington	1 30	.. ..
Saugerties	35	.. ..	Warren	1 45	.. ..
Sing Sing	50	.. ..			
Stuyvesant	40	.. ..			
Tarrytown	50	.. ..			
Troy	55	.. ..			
West Point	30	.. ..			
West Troy	55	.. ..			
Yonkers	55	.. ..			

From Washington, N. J.

Hackettstown	$	58	Drakesville $ 1 08
Waterloo		81	Dickerson's Basin 1 11
Stanhope		90	Iron Dale 1 19
Port Morris		99	Dover 1 24
Rockaway	1	32	Paterson 1 75
Denville	1	33	Pompton 1 75
Boonton	1	44	Bloomfield 1 85
Little Falls	1	70	Newark 1 90

From Georgetown or Alexandria.

To Philadelphia	$1 50	— —	Boston	2 75	2 50
New York	2 15	— —	Sound Ports	2 25	2 50

From Elizabethport.

Albany	$1 00@	— —	New London	1 25@	— —
Boston	1 75	1 80	Newport	1 50	— —
Bridgeport	1 00	— —	New York	55	60
Fall River	1 40	— —	Norwalk	1 00	— —
Hartford	1 50	— —	Norwich	1 20	— —
Hudson	1 00	— —	Pawtucket and towing	1 50	— —
Lynn	— —	— —	Portland	1 95	— —
Middletown	1 25	— —	Portsmouth	2 15	— —
New Bedford	1 40	— —	Providence	1 40	— —
Newburyport	2 10	— —	Salem	1 80	— —
New Haven	1 00	— —	Taunton	1 40	— —

Provincial Freights.

	Currency
Sydney to N. Y.	$3 40
Sydney to Boston	3 00
Lingan	3 50
Lingan to Boston	3 00
Cow Bay	3 25
Cow Bay to Boston	2 87
Cow Bay to Portland	2 50
Big Glace Bay	4 12½
Little "	3 00

Foreign Freights.

New Castle and Ports on Tyne	17s@ keel
Liverpool	15s @ 20s

BOSTON STOCK MARKET.

(By Telegraph.)

BOSTON, August 2, 1867.

Prices bid to-day were as follows:

Canada	—	Minnesota	5
Copper Falls	25¼	Quincy	20
Franklin	17	Cary Improvement	7½
Hancock	7	Rockland	—
Huron	30c	Boston Water Power	21¾
Isle Royal	—	Central	—

Sales at Boston Stock Exchange, August 8.

200	shares	Allouez	7	100	shares	Hancock	b 60 7½
100	do	do	b 30 7½	200	do	Ophir G	1 72
100	do	do	b 10 7½	150	do	Pewabic	11¾
100	do	do	b 60 7½	100	do	do	11½
100	do	Bay State	3½	SECOND CALL.			
100	do	Calumet	16	50	do	Cop. F's	25½
33	do	Franklin	17¾				

SAN FRANCISCO STOCK MARKET.

(By Telegraph.)

SAN FRANCISCO, July 3, 1867.

Gould & Curry	$705	Yellow Jacket	$1 140
Savage	4,400	Belcher	270
Chollar-Potosi	435	Alpha	500
Ophir	135	Imperial, per share	205
Hale & Norcross	3.000	California Steam Navigation	70½c
Crown Point	1,300	California State Telegraph Co.	31c.

Weekly Coal Trade Circular.

NEW YORK, August 9th, 1867.

The Coal Trade remains very quiet; the demand is limited, and the supply in excess of the immediate requirements of the Trade. The Lackawanna Companies, who occupy "the Waterloo position in the Coal market," are producing as much coal as ever, and, even at the low prices current, are making some money, as they get all the profit there is in the various departments of the Coal business. They own their lands, they mine their own Coal, they control the transportation, and sell their own coal; hence, in every close contention for trade, such as that now existing, their position is impregnable, while with the other regions the position of affairs is exactly the reverse. There, capitalists own the lands from whom the operator leases, paying a royalty of about thirty cents per ton. After the coal is mined the operator is compelled to pay such rates to the transportation companies as they may see fit to exact, which this year, considering the condition of the Trade, are simply exorbitant. When his Coal reaches tide-water, it finds its way to consumers' hands through commission men, who must also be provided for in the way of compensation; so that, in the effort to compete with the more favored regions, his drawbacks are such that he cannot enter the market on an equal footing. The remedy for this condition of things is very simple, to wit: all interests should contribute in proportion to their profits to enable the operator to meet the demands of the market. It is well known, that while the operator is doing all he can, the various transporting companies are even now coining money. The result which is now developing is, that the solvent operators are stopping; the weak ones must go to the wall, and the transporting companies will soon realize that, as the result of their avaricious policy, they have "killed the goose that lays their golden eggs." Many leading Collieries stopped on the 1st of August, and more will follow soon unless prices improve.

Consumers still continue to hold off from making purchases, and it is probable, when the fall Trade sets in, they may discover that they have permitted the favorable opportunity for buying to pass away. Now is the time. Coal can not be any lower.

F.

Reducing Sulphurets.

A writer in the Amador, California, *Dispatch* describes the process used in Cony & Biglow's mill, in Jackson, for reducing sulphuret ores:—"It is here termed the chlorination process, and in Europe Plattner's process of reducing sulphurets. At the mine above named, a reverberatory furnace has been constructed to reduce their sulphurets. It is of the capacity of about three tons. At present it is not worked to its full extent. This consists of a drying and burning furnace. The sulphurets are first poured into the upper drying furnace; they remain there about twelve hours, being stirred occasionally with an iron hoe or shovel. When they get quite hot about one per cent. in weight of common salt is spread upon and stirred among them. The sound of cracking would remind you of a Chinese holiday. This is intended to disintegrate and to form chloride of the baser metals, thus freeing the pyrites; the future chlorination is thereby aided. After the first drying and partial roasting they are raked down into the burning furnace. Here they are kept continually stirred and kept at a high heat, which is aided materially by the burning sulphur. The fire passes over and in contact with the pyrites. This is continued for twelve hours, more or less, according to the heat and attention given; they are then raked down below this and left to cool; then they are raked through on the opposite side, where they are spread and sprinkled with water, and then sifted into a large tank, which has a false bottom, covered with boughs; upon this a layer of gravel; over this canvas is stretched upon a hoop; over this a layer of sand is placed. When filled with the burnt mass it is soon covered and sealed; the chlorine is passed from a receiver, through a lead pipe into the tank, under the false bottom, through which it is made to permeate the whole mass, coming in contact with the fine particles of gold forming the chloride. When there is no more gold for the chlorine to combine with, the gas accumulates and forces its way back into the receiver and the pressure of the gas will drive the water down and pass out in the form of bubbles. This being completed, the lead pipe is removed from the tank and a faucet placed therein, and the cover removed. The tank is filled with water, and is allowed to leech through this mass. The chloride of gold being soluble, is conveyed away in the water, and this is run into other tanks for the purpose of precipitating the gold, which is done by adding the sulphate of iron to the solution, and then most of the water is drawn off, and the residue is evaporated. Then this is treated, to free the gold from extraneous matter, and it is then smelted by ore with a proper flux and run into a bar. To generate chlorine manganese and common salt (chloride of sodium) about equal parts, if pure, are put into a lead gasometer, surrounded by water. This is placed upon a sand bath, over a small furnace, in which a slow fire is kept, and sulphuric acid is added occasionally through a funnel-mouthed lead tube to the compound of salt and manganese. Chemical action soon commences; chlorine and hydrogen gases are evolved. The latter is mostly absorbed by the water surrounding the gasometer; the chlorine and any hydrogen that may remain passes on through a lead pipe to the receiver, from which it passes through a lead pipe into the tank as before named. The pipe conveying the gas from the gasometer to the receiver, terminates in water under it; the remaining hydrogen, if there is any left, is absorbed, and the chlorine passes on pure. From the first ton of pyrites worked by this process, gold was obtained to within four per cent. of the assay. The assay was $155 per ton. The pyrites can be concentrated so their value would be $200 or more per ton. Every week this mine turns out eight or ten tons of sulphurets, and last week thirty to forty ounces of gold amalgam were daily taken from the plates at the batteries. So we have been informed by those who know.

Large Trees in Missouri.

Prof. Swallow, of the Missouri Geological Survey, gives the following actual measurements of large trees in Southeast Missouri: The largest is a sycamore in Mississippi county, sixty-five feet high, which, two feet above the ground, measures forty-three feet in circumference. Another sycamore, in Howard county, is thirty-eight and a half feet in diameter. A cypress in Cape Girardeau county, at a distance of one foot above the ground, measures twenty-nine feet in circumference. A cottonwood in Mississippi county measures thirty feet round, at a distance of six feet above the ground. A pecan in the same county is eighteen feet in circumference. A black walnut in Benton county measures twenty-two feet in circumference. A white oak in Howard county is twenty-six feet in circumference. A tulip tree (poplar) in Cape Girardeau county is thirty feet in circumference. There is a tupelo in Stoddard county thirty feet in circumference. There is a hackberry in Howard county eleven feet in circumference. A Spanish oak in New-Madrid county twenty-six feet in circumference. A white ash in Mississippi county is sixteen feet in circumference. A honey locust in Howard county is thirteen feet round. There is a willow in Pemiscot county that has grown to the size of twenty-four feet in circumference and one hundred feet in height. Mississippi county boasts of a sassafras that must be king of that tribe; it measures nine feet in circumference. There is a persimmon in the same county nine feet in circumference. In Pemiscot county there is a dogwood six feet in circumference. In Mississippi county papaws grow to a circumference of three feet, and grape vines and trumpet creepers to a circumference of eighteen to twenty-two inches.

Interesting Discovery.

A few days ago, while some workmen were excavating a cellar in Polk township, Monroe county, the workmen struck what appeared to be a solid ledge of rock, and sitting down to rest, one of their number began idly to pick at an apparent fissure, when a block of stone nearly two feet square, disappeared with a dull thump. The men set eagerly to work, and removing the bottom of the pit, disclosed a chamber with a six-foot ceiling, and eighteen by twenty-five feet within the walls, which are solid, neatly-seamed stone work. Ranged in rows on rudely-constructed platforms were twelve skeletons, each with tomahawk and arrow heads at its sides, ear-rings and bracelets of solid silver lying where they dropped, and piles of what appeared to be furs, in the centre of the platform, each pile crumbling to dust as soon as exposed to the light. A number of tools made of copper, and hardened equal to the best cast-steel, were also unearthed, and fresh discoveries are constantly being made.—*New Albany, Ind.*

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NEW YORK, SATURDAY, AUGUST 3.

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ON DIT ABOUT MINERALS.

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☞ File weekly your copy of the JOURNAL OF MINING.

PETROLEUM AS A STEAM FUEL.

We present, on the first page of the present issue, an illustration and description of the apparatus for burning petroleum under steam-boilers, patented by Col. HENRY S. FOOTE, recently tested on board the steamer Palos, and now being exhibited, in actual operation, at the Battery, in this city. In common with the many visitors, of all professions, who have witnessed it, we must give this apparatus great praise for its simplicity, and evident adaptability to the object in view, viz.: the complete combustion of the petroleum. With this achievement, the first and most formidable obstacle to its use as a fuel may be said to be overcome. There is no doubt that the fire produced is intensely hot and entirely without smoke. Add to these advantages the perfect cleanliness of the operations of making and extinguishing the fire; the instantaneousness with which they can be accomplished (as easily as lighting or turning off the gas in a parlor); the complete control over the fire possessed by the engineer; the absence of coal-heavers, firemen, and all the dirty, noisy paraphernalia (infernalia, let us say,) of an ordinary coal-burning boiler; the saving in space occupied by fuel; and the increased durability of the whole boiler, as well as the petroleum-retort and burners, and we have a category of pretty well-substantiated claims, the force of which can scarcely be resisted.

To offset these, it may be said that the actual cost of fuel for a given production of steam is as great in this furnace as in good coal-burners. This is probably true; and if it is not true to-day, it will become so as soon as the price of petroleum rises. Superior convenience, and the economy of space, time and labor effected by the use of petroleum, must be the points upon which its introduction is recommended. In California, where it is proposed at once to begin its use, economical conditions are all in its favor—coal being very high, and crude petroleum (such as it is) very low. It is believed that abundant supplies of such material as the Santa Barbara petroleum can be obtained.

We desire to add a few words as to the principle on which this invention is based. The explanations of it which have hitherto appeared are sadly at variance with the well-known facts of chemistry; and, in the description upon our first page, the repetition of such jargon is wisely avoided. It has been said, for instance, that the steam, in passing through the heated coil, and coming in contact with the iron filings therein contained, becomes decomposed, so that (according to one statement) hydrogen gas is produced and added to the hydrocarbons in the retort, or (according to another statement) hydrogen and oxygen are separated, and enter the retort as such. In both cases, it is asserted that the hydrogen unites immediately with carbon in the retort, producing more highly hydrogenated hydro-carbon. The first of these hypotheses is easily disproved. In a very short time the iron-filings in the coil are covered with a thin coating of magnetic oxide, after which they cease entirely to decompose the steam. As every pound of hydrogen produced by such a reaction would involve the oxidation of some twenty-eight pounds of iron, it is fortunate for the inventor that his iron filings really serve no purpose whatever.

As far as the decomposition of superheated steam is concerned, it may indeed take place, but not so that the hydrogen unites with carbon. Chemists are well aware that hydrogen and carbon cannot be made to unite in the gaseous state. We are acquainted with no hydro-carbons, except such as are produced by organic processes. It is certain that no more hydro-carbon is produced by this contrivance, than is already in the petroleum. It is the oxygen which unites with a portion of the carbon in the retort, forming carbonic oxide—if, indeed, any chemical union of gases whatever takes place previous to the instant of combustion. The advantage of introducing these gases, together with the common air, into the retort, lies probably in the perfect mechanical mixture thus obtained.

At the moment of combustion, carbon and hydrogen unite with oxygen, producing water (steam), carbonic oxide, and carbonic acid. An absolutely perfect combustion would have no carbonic oxide. A simple atomic calculation, into which we will not enter here, will show that the introduction of steam, in not too great proportion, must increase the intensity of the flame, and the completeness of combustion. The jet of air forced into the retort is an application of the principle of the famous Bunsen burner, used in all our chemical laboratories. It is absurd to suppose that all the oxygen required for the combustion of the fuel is supplied by the jet of steam, or the jet of air, or both. If it were so, then the combustion would take place inside the retort. As regards the perfect combustion claimed, we must distinguish between absolute and relative perfection. The absence of smoke from the fire proves that no carbon is left unconsumed—it does not prove that no carbonic oxide escapes without higher oxidation. Let it be sufficient, therefore, to say that the combustion is practically or approximately perfect. Much better, it certainly is, than anything hitherto accomplished for steam-boilers; and much better than it could be if the explanations of its nature, current in the public press, were correct.

THE RELATION OF LANGUAGE TO NATURAL SCIENCE.

It is extremely fashionable now-a-days to ridicule the attention which many students pay to the study of languages, and to extol in comparison the claims of natural science. We are told that Latin and Greek, grammar and rhetoric, should be banished from our schools, to make way for chemistry, botany, geology and mineralogy; that dead languages are of no value in comparison with the living facts of nature. There is some truth in this talk, as there is some sense in most nonsense; but we think a little reflection or a simple observation of human life will suffice to strip such sweeping condemnations of their fancied force.

Far be it from us to underrate the value of the study of Nature. It is the first and most directly important object of attention to which we can turn. It is doubtless too much neglected in our schools; and the lack of training which the faculties of observation suffer in childhood is one cause which renders most adults such poor observers. But is not language also a phenomenon of nature, deserving to be studied? And is it possible to advance far in any scientific investigation without mastering the science and the art of language? It is true that pedagogues have abused their privileges, and, plunging the young into endless labyrinths of gloomy syntax, have made pedants out of born philosophers, and wasted on learning, as an end, the powers which should have been devoted only to knowledge, as a means. But pedantry is not confined to classical or literary spheres. Many a savan is a pedant; and there is little to choose between a head which is nothing but a herbarium and a head which is nothing but a dictionary.

Not judging the study of language, then, by its abuses (however frequent they may be), we repeat that it is an absolute prerequisite to high attainment in science. For all we know, the eagle or the mouse is as keen an observer of natural phenomena as we are. Many animals doubtless surpass us in the delicacy of their perceptions, having not only finer, but, perhaps, other, faculties than ours. Our great advantage is the power of transmitting our observations by means of language. Upon this rests all our hope of progress, from generation to generation. The man who observes, reflects, discovers, and dies without bequeathing his gains to others, had as well not been born, for all that his life profits the thinkers of the world. Better to make less progress, and secure it to mankind, than advance alone beyond the picket lines of the age, and fall without giving even a signal.

The use of language is then most important to all scientific progress. In fact, no one denies this proposition; but many shake their heads at the study of language, and think that all this drudgery might well be dispensed with; "people write well enough when they tell what they know, without a liberal education." On the contrary, the use of language is an art; and the use of a clear, precise, scientific style is the very highest and most difficult art of language. A very tolerable, sprightly essay-style may be acquired by reading good English authors, and imitating their felicitous, flowing periods. An eloquent oratorical style requires nothing but good lungs and a fearless gesticulation, with a stock of swelling bombast or comic anecdote, as the case may be. A good sermon-style needs only to be quiet, and not attract the attention of the audience. A romance-style—there is no such thing; anything is a novel that is called so. In a word, looseness or ignorance or obscurity of style may be tolerated without great harm in any of these departments; but in scientific writing, nothing will do but the highest training and most careful study of style.

Some few persons do acquire a clear and accurate style by imperceptible means; but many more are hopelessly unable to express their thoughts in words that will bear the rigid examination to which all scientific utterances are sure to be subjected. Even those who gain this great art without study, are indebted for it to the models afforded by others who did study thoroughly and successfully.

The world is full of the unfortunate results of the hasty judgment to which we have alluded; and it is full also of testimonies to the wisdom of the opposite opinion. Half the fruitless discussions which only confuse, not illuminate, the questions of the day, arise from the inaccurate use of language: they are strifes about words. Many a strong man is shorn of half his power, because he has never acquired the means of making that power felt; and many a weaker thinker, being armed with the powerful word, carries off the palm of victory and fame. But when language is wielded by the true master of thought, how men recognize its power! Agassiz, Tyndall, Liebig, Herbert Spencer—these, and such as these, are the true models for our young votaries of science.

Let those who scoff at "liberal education" remember that without thorough study and training in the science and art of language, no man can rise to the highest command of any branch of the philosophy of nature. The lesson is one which, we think, many American savans need to learn; otherwise we should not have discussed it at such length. And if, at any time, our criticisms upon the style of scientific works may seem too strict, our deep impression of the importance of a high standard in this respect must excuse our over-eager fault-finding.

SLATE.

The use of American slate, as material for roofing, is comparatively of recent date. Formerly, the quarries of Wales supplied the demand of the United States, which almost ceased with the introduction of flat and tin roofs. In Great Britain, however, and, to a great degree, upon the Continent, slate has always preserved its pre-eminence as a safe, cheap, durable and ornamental material for roofing. In our own country, the revival of architectural taste, the fashion of French and Gothic roofs, and the high price of imported tin, have been instrumental in reviving and augmenting the demand for slate. Wales cannot even supply the British Kingdom; and we are thrown back upon our own resources, which are, fortunately, ample. The business of quarrying slate for roofing purposes, which was begun some years ago in the United States with considerable zeal, has suffered various vicissitudes, incident to the inexperience and lack of judgment of the early *entrepreneurs;* but, after many failures, a degree of success has been achieved which places this industry on a sound business footing. Our best roofing-slates are as good as those of any other country, and are furnished at a price which renders them, especially when durability is considered, cheaper, as well as better in many other respects, than shingles or tin. As for pleasing ornamental effect, nothing can compare with a roof of tastefully arranged purple and green Vermont slates. The advantages of slate are well summed up in the introduction to *Stafford's Slate Tables* under the following heads: 1. Cheapness. 2. Utility. It needs no paint nor repairs, and does not taint with paint or decayed wood the rain-water passing over the roof into the cistern. 3d. Safety. It is proof against fire. For this reason insurance companies favor slate roofs. 3. Ornamental qualities. 5. Durability.

Slate is also coming into use for a variety of other purposes, of which we may only allude here to the marbleized slate mantles and other ornaments, which equal in beauty the most expensive marbles.

PENNSYLVANIA COAL MINES.

As we learn from an esteemed correspondent in Wilkesbarre, Pa., that section of the coal fields is suffering greatly by the continued depression in the coal market. The Philadelphia Association has reduced the price of coal at Mauch Chunk 25 cents per ton, adding the last straw to the overburdened back of this industry. Few can carry on mining with profit at the present rates; yet in many cases the loss by stoppage would be still greater. In Schuylkill county the

business is even worse; as the depth of the mines, and the insecure roof of the coal-beds, requiring heavy timbering, necessitate much greater running expenses. The cost of timbering alone, in some of the Schuylkill county mines, amounts to 22 cents per ton of coal produced. Notwithstanding these facts, a large number of new mines are being opened in both districts—an evidence that many capitalists are ignorant of the present condition of things, or believe it to be but temporary. In our opinion, reactions like the present are the natural result of seasons of extravagant profits and extraordinary activity. We are sorry that the miners, who are less to blame than the transportation companies, should bear the full burden of the retribution; but it may serve a good purpose in showing them that their interests, in the long run, are identical with those of the consuming public. The whole category of combinations of railroad and canal companies, combinations of mine-owners, combinations and strikes of workmen, and, finally, combinations of "adverse circumstances"—in other words, hard times and low prices—are parts of one unfortunate and ill-adjusted system.

BRUNO KERL.

Professor BRUNO KERL, of the Royal Hanoverian School of Mines at Clausthal, has accepted a call to the comparatively new Mining Academy at Berlin. The recent political changes in Germany, by which Hanover is made a part of Prussia, render it unnecessary for the Government to maintain the school at Clausthal in its old rank; though doubtless it will continue to be a centre of scientific instruction for the mines and metallurgists of the Hartz. In fact, the antiquity of the school and the immense extent and variety of mining and metallurgical works with which it is surrounded, afford advantages of practical study to its pupils which no new institution can hope to acquire, least of all in a city like Berlin, not situated in a mining district. It appears to be the policy of the Prussian Government to concentrate at the University and scientific schools of Berlin the best talent of Germany, and to leave the older institutions in the provinces as schools of preparatory instruction and supplementary practice. This policy is most admirable: and affords a model which we should do well, in this country, to imitate. We are in a fair way to have a mining course attached to each of our principal colleges; and these courses will be valuable in proportion as they are conducted by thorough scientific men. But there should also be, in all the mining districts of the country, schools of practice, under not less competent control, where the education of experience might be added to (not substituted for) the teachings of theoretical science. But we digress.

Prof. BRUNO KERL is one of the most distinguished metallurgists now living. His great work on metallurgy (*Kerl's Hüttenkunde*) in 4 vols., is confessedly the most useful and complete hitherto published. That of Rivot, although equally admirable, does not cover precisely the same ground, and could more easily be spared. His new manual of assaying is the latest and best in that department. He is at present engaged in translating, revising and editing the German version of Muspratt's Chemistry applied to arts and manufactures, now passing through the Brunswick press. His transferral to Berlin will be a great gain to the *Bergakademie*, a great loss to the Clausthal school, and a well-merited recognition of eminent talent, learning and industry.

ASSESSMENTS.

Ophir Silver Mining Company, of Nevada, $36, gold, per foot, due Aug. 31; Huron Mining Co., L. S., at Boston, $3 per share, payable Sept. 10, interest thereafter.

MEETINGS.

Chignects Gold Mining Co. at Amherst, Nova Scotia, Aug. 29, 10 A. M.; St. George Coal Mining Co., same time and place; Boston & Reading Silver Mining Co., at 84 Water street, Room 4, Boston, Aug. 13, 10 A. M.

DIVIDENDS.

Central Petroleum Co. of New York, at 8 Pine street, 10 cents per share, now due; Montana Oil Co. of New York, at 192 Broadway, one per cent. on demand; Ocean Oil Co. 20 cents per share on demand; Triumph Oil Co. at Pittsburgh Pa., second dividend, 5 per cent., payable after 15th inst.

NEW PUBLICATIONS.

A POPULAR TREATISE ON GEMS, *in reference to their Scientific Value: a Guide for the Teacher of Natural Science, the Lapidary, Jeweller and Amateur: together with a Description of the Elements of Mineralogy, and all the ornamental and Architectural Materials, with Elegant Illustrations: By* DR. L. FEUCHTWANGER, *Chemist and Mineralogist. &c., &c.* Published by the Author, 55 Cedar street.

The second edition of this work, published in 1859, having for several years been out of print, and in great demand, the accomplished author has issued a third, revised and augmented edition. It is a decided improvement upon the previous ones; and yet we hardly go too far in saying that the publication of 1859 was never surpassed, until now, in completeness and adaptedness to its purpose. Comparing Dr. Feuchtwanger's book with that of Mr. Harry Emanuel, F.R.G.S., we must at once give the palm to our adopted fellow-citizen, for the amount, as well as the arrangement, of the information he presents. The introductory sketch of Mineralogy is not only useful to the complete understanding of the remainder of the book; it is at the same time one of the clearest and most practical manuals to which the American student can refer. We are especially glad to see the crystallographic classification of Naumann adopted, since experience has led us to believe that system to be most simple and practicable for the determination of crystal forms. The second part of the book is devoted to a general discussion of Gems—their properties, relative value, history, uses and imitations. The third part contains descriptions of individual gems, including, also, many minerals not usually classed as gems—in fact, all the useful minerals except metals and their ores. Beautiful colored illustrations accompany the text and add greatly to its interest and value. A complete index completes the fitness of the work as a book of reference, and an admirable chronological list of works on gems and minerals, since the 15th century, together with a table of the characteristics of gems, and an article on the value of diamonds, precious stones, &c., in 1867, constitute an appendix which apparently leaves nothing to be desired.

A portrait of the author, which serves as frontispiece, will be welcome to his many friends, and interesting besides, as a specimen of heliographic engraving, as practiced by the company, under the direction of Baron Egloffstein.

An unfortunate confusion in the numbering of the Plates (pl. 2 should be pl. 5; pl. 3 should be pl. 2; pl. 4 should be pl. 3; and pl. 5 should be pl. 4) is the only serious error we have noticed. The popular manner in which, without violating scientific accuracy, the subject is treated, will, no doubt, secure for this volume a circulation as great as that of the former editions. In the laboratory, the school room and the parlor alike, it cannot fail to be a valued and welcome friend.

SLATE TABLES—*Designed for the Use of Slaters, Quarrymen, Architects and Dealers, with Practical Instructions to those Unacquainted with Slate Roofing: exhibiting over thirty sizes Roofing Slates; showing the surface, in squares and feet, covered by any given number of Slates, from one to twenty thousand. Likewise, several Tables exhibiting the number of squares and feet in any given quantity of Tin Plate*—*Also, several tables useful to Builders, Slaters and others. By H. N. Stafford. Published by* COOK, OVERFIELD *and* SNEDEKER, 35 Dey street, New York, and 405 Commerce street, Philadelphia.

As these compact and useful tables have already passed through two editions, it would be superfluous for us to explain their value to the public for which they are intended. The rapid increase in the consumption of American roofing-slate is causing a corresponding extension in the business of quarrying, transporting and laying this material; and a large circle of interested parties is ready to appreciate anything which bears upon the subject. Those who have not already learned, by experience, the convenience of such a manual as this, (if any such there be,) will find it, upon trial, in the saving of labor and mistakes, to repay them many times the amount of its trifling cost.

Correspondence.

[To insure insertion of Correspondence in our columns the full name and address of the writer must be given.]

South American correspondence of the JOURNAL OF MINING.

A Trip to the Coal Fields of the State of Bolivar—Geology of the Country—Gold Yield, etc.

CARTHAGENA, STATE OF BOLIVAR, COLUMBIA,
July, 1867.

Our route from Carthagena to the coal-fields of the State of Bolivar, lay along the coast southwards to the Gulf of Morrisquillo, and thence inland by horses. The coasting and inland water traffic of the country is carried on by bungoes, large canoe-shaped vessels manned by three or five men, generally negroes, who are called "bogas." A canoe is said to be the primitive idea of all water vessels from the Ark to the Great Eastern. Ours was as nearly of the primitive idea as possible and have any enlargement. The keel, if it could be said to have one, and the bottom was of one tree. The sides, prow and poop, had been built up by knees and transoms. Across the hinder portion of the main body was thrown a deck, and over this some bent hoops covered with thatch of palm leaves. Here was the primeval idea of a hurricane-deck; here was the "coop" of seven first-class passengers, in which as tailors we sat by day, and slept as best we might by night. Under us was the lower deck for five second-class passengers, three of whom were ladies of the country, and two children. On the poop behind us, *a la* Turk, sat the captain, our bold and patient navigator, steering his craft through canal, lagoon and coastwise, with a negro to hold an umbrella for awning, and assist in managing the "main sheet."

I shall never cease to admire the patience of the captain. From 1 o'clock P. M. until 4 o'clock the next morning I do not think he changed his position, but sat there, tiller in hand, watching the clouds, winds, stars and mainsail, as if he were a figurehead attached to the vessel. At 4 A. M. we landed to cook breakfast. Here the captain took his fishing net and caught about one hundred fish before the meal was over. We then resumed our voyage to the coral banks, where our captain again took to fishing with good success. Here he took the first sleep in twenty-four hours, but only until the sea breeze set in, when he resumed his seat at the tiller, and left it not until he cast anchor at Tolu, an old Spanish town at the head of the Gulf of Morrisquillo, about 5 o'clock P. M.

The next day we were in the saddle at 5 P. M., after coffee, and pushed out eastward over an old Spanish road which had been an Indian trail for centuries before Columbus discovered the Spanish Main. The first seven miles of the road was rich alluvial soil, covered with dense undergrowth of the tropics. Now and then we saw dimly through the thicket a sugar plantation, maize, or cacao. At Old Tolu we struck the first rock from the sea shore; coralline limestone, rising into high bluffs, "cerros" of the country.

A few words upon the geology of the country. All the coast of South America, from Aspinwall around to Santa Martha, is recent coral formation. All the islands of the coast, reefs, shoals, &c., are also of this recent rock. Probably all the West India Islands have a coast line more or less extensive due to the up-building life-force of the coral zoophyta. At Carthagena rises the "cerro" El Popa, a hill about five hundred feet high, which is the termination of a short range. This is coralline limestone, post tertiary in age. Along the coast of Bolivar, southward, the range of hills bordering the sea, or the first inland are of this formation. They can be distinguished from others by their more rugged outline, and appearing as isolated hills or short ranges. The trend of these hills conforms to the line of the coast north and south.

On the South of the Gulf of Morrisquillo there runs a range of hills east and west—Serrania, Antero, and Serrania Cispata—as far as the Sinu river; and probably the hills westward from this river are of the same sandstone and porphyry formation, having a high southerly dip and east and west trend. Isolated hills of porphyry appear at various places out on the plains—*i. e.* low lands—of the country, as at Momil, San Sebastian and others.

Proceeding inland from the coast, or eastward, the next succeeding range to the limestone, or coral, is the coal bearing rocks of the country, composed of limestones, clays, shales and sandstones, bearing true coal basins. Immediately following this latter, and it may be said to be a portion of it, is the serrania sandstone of the country, rising into bold uplands, diversified with undulating surface, and clothed with beautiful savannahs. This serrania sandstone forms the divide between the hydrographical basins of the Sinu, San Jorge and Canca rivers.

It is mainly composed of fine granules of quartz, with inter-stratified layers of pebbles. There is occasionally diagonal-lamination. The uniform dip is 10° east. It must be of greatness, for I rode for the space of three hours over the face of it without signs of faults, and everywhere presenting the usual uniform dip of 10°. Its height from the sea was by estimation 700 to 1000 feet. Under different names—St. Martin, St. Tolupieto, St. Jeronimo—it extends from the Carribbean sea, north of Carthagena, to the mountains of Antiochia. It is in fact the dwindling down of one of the great divisions of the lofty Andes mountains—viz.: the Cordillera Meridional.

At the risk of repeating what may be known to many of your readers, I will state that north of the latitude of Quito, where the Andes culminates, it divides into four great mountain ranges: first, Cordillera de la Costa, which is the connecting link between the two continents; second, Cordillera Occidental, which helps form the Atrato Valley; third, Cordillera Meridional, which is the boundary of the Cinu valley on the east, and Magdalena river and its affluences on the west; and fourth, Cordillera Oriental, which divides the Magdalena and Orinoco waters.

As these mountains proceed northwards they bear all the minerals of the mother range. Antiochia produces about six millions of gold annually, Choco one million, and the whole country about ten millions. When they fall off in height, and become serranias, or elevated plains, they are blessed with the most delightful and healthy climate of this or of any other country. Nothing can exceed their beauty, fertility, and salubrity. The short time I spent upon them is most delightful, in remembrance of physical enjoyment.

To return to the itinerary. After leaving the alluvial plains at old Tolu, our course still lay eastward along the foot hills of the great serrania for two hours, when we entered a dry arroya, and followed it up about three miles. Here commenced the ascent of the serrania, over the abrupt western edge of the elevation. Here had been the road for the Spanish traffic in hides and balsam Tolu for centuries, and for the Puebla Indians for untold centuries before. Mule paths were worn in the sandstone, until they became impassable from their depth and narrowness, when new ones were opened, the old paths remaining as monuments of traffic on the road and age of its commerce.

The serrania surmounted, there burst upon the view one of the loveliest panoramas of this or any other country. Over the upturned sand-stone of the serrania, we travelled east to Sincelajo, where we turned southward to Chinu. At the latter place we halted for two days, and made local examinations. The third day we took up the line of march, and proceeded westward to Mocha, where we began to find the first signs of coal. From here on to St. Andres, five miles, we were over a coal basin.

COAL OF THE SERRANIAS.

Coal has long been worked on the high plains of Bogota from here it extends north to the sea-shore at Rio Hacha, not continuous, but in separate localities—enough so to be worthy, geologically and economically, of the appellation of carboniferous formation. The distance cannot be less than five hundred miles. Outliers of this formation doubtless extend into Venezuela.

Looking at the coal-bearing rocks east and west, they extend from the Orinoco waters to the Pacific ocean, about four hundred miles, broken, indeed, into separated coal-fields, but many of them large enough to be worthy of examination. One of these coal-fields is in the valley of the Sinu river, and was the more immediate subject of my examination.

The valley of the Sinu is about 200 miles north and south, by 100 to 75 miles east and west. It is a coal-field throughout its whole extent; not that the true coal-bearing rocks are unbroken throughout its whole extent, but that enough remains on the north, south, east and west, and dipping under the rim and low lands, to give the valley the appellation of the coal-field of Sinu. True, at present it is imperfectly known; but it is destined to have a most thorough geological examination.

Here is coal within three hundred miles by water communication with Aspinwall, which is destined to be, next to New York, the greatest coal-consuming port for interoceanic navigation on the continent. It will not always continue to bring coals from England and the United States, when coal from this valley can be delivered there for five dollars per ton.

My chief explorations were made at a village of the Serrania St. Jeronimo, about six miles back from the Sinu. Here I found five well-formed and distinct coal veins, having regular floors of stigmaria clay, roofs of shale, containing coal plants or sandstone, intervening beds of shales and limestones fossiliferous, having identical fossils with limestones at Pittsburgh, Pa.; petroleum-bearing sandstones are also common. The identification of these coal-producing rocks with those of our country was a great pleasure, for the coal of Bolivar has been placed either in the tertiary or in the cretaceous. Doubtless that in the Occidental de la Costa may be so, similar to the coal in California and Oregon, and at Bellingham Bay, and at other points on the Pacific slope; but the coal of the Sinu valley by none of its fossils, whether of land or sea, can be separated from the coals of Virginia and North Carolina. In a future number a list of plants and shells will be given, after they have been fully identified. At present I think the coal to be Jurassic.

It was our intention to fully explore the coal at the upper end of the valley—St. Jeronimo, Rio Verte, and over near the Atrato—and afterwards, to take a look at the gold, silver and platina mines in the mountains which separate Bolivar from Chauca; but the revolutionary state of the country prevented parties from joining us, and forbade all enterprises far from the sea-shore. Antiochia supported congress, Bolivar the President. When we left home all was peace and quietude; but revolutions are chronic in Spanish America. The "ins" desire to stay, the "outs" to come in, and they can only do it by revolution.

We reluctantly turned our footsteps to the sea-shore. Arriving at Carthagena we found the blockade of Santa Martha removed, and the steamship Tyne bound thither. We had mines of coal and quicksilver to examine in that vicinity, and near the coast. Hoping to accomplish the work, we took the

Tyne for Santa Martha. Arriving in this ancient and dilapidated city, we found it in the liveliest state of Spanish American excitement. The Santa Marthians have a chronic feud against the Carthagenians—the one belonging to the Conservative, the latter to the Liberal party—one supports congress, the other Mosquero, the President. The Santa Marthians had cut out of Carthagena port, by the aid of Americans, a vessel loaded with munitions of war, and the only steamship of war the Mosquerians had at command. In addition, their forces had recently taken Baranquilla, the most important city for commerce belonging to Bolivar. Every man's hat had on it a band, stating the company of soldiers he belonged to. Business houses had their doors shut; commerce was suspended; the whole city was given up to rejoicing; fireworks illumined it by night, and martial music animated it by day. Nothing was wanting to give the Santa Marthians the most sparkling cup of human felicity, and this was a counter-revolution in her own borders. This she had. Rio Hacha department was disputing in arms the occupancy by the President of the State's chair. What earthly want of a Spaniard's heart but here was supplied. As an Indian expresses it, "Plenty revolution, plenty fighting, plenty nothing to do."

It was impossible to obtain riding horses to pass beyond the confines of the city. Even mines within six miles could not be visited, to say nothing of those lying inland. We had nothing else to do than remain under the protection of the flag of John Bull, and return with the Tyne to Aspinwall—leaving the Columbians to the enjoyment of their beautiful country, blessed with a mild climate for intertropical, with all their rich mines of precious and other metals, to their constitutional *manana* and chronic revolutions. S.

ever, is made by the momentum of the balance wheel, as the pinion is toothed only about two-fifths of its circumference. As the rack reaches the end of the stroke the cam, F, rolls against the curved guides, G, and assists in throwing the rack in the other direction. We have seen a small engine work, and its operation was as smooth, and as free from jerking as could be desired. The Woodward Steam Pump Manufacturing Company—well known to our readers—have carefully examined Mr. Page's invention, and have signified their intention to apply it to their pumps. Mr. Page is assured that his engine will develop, for pumping purposes, an actual gain of at least fifty per cent. Applied in this way it becomes a subject of peculiar interest to those interested in the development of mining property, in which economy in every particular is so necessary, and we deem this invention worthy of the attention of mining engineers, to that end, and would suggest that they and others interested call and see the engine in operation at Mr. Page's office, or address as above, for further information.

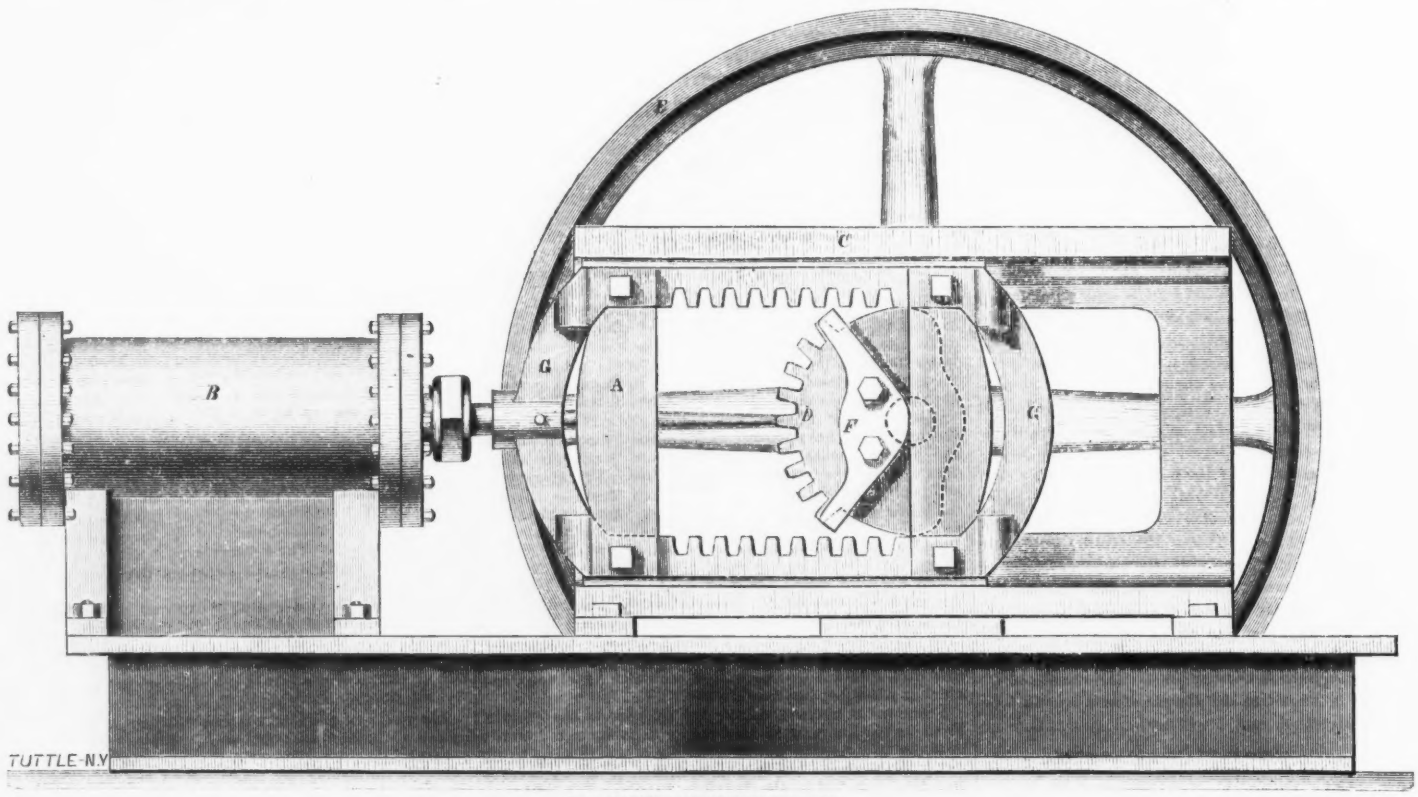
Patent Claims.

Interesting to Miners, Millmen, Metallurgists, Oil-Men, and Others.

The following claims have recently been issued from the United States Patent Office:

67,171.—MOLD FOR CASTING INGOTS.—Henry Dickinson, Jersey City, N. J.

I claim the above-described construction and arrangement of a mold for casting steel and other ingots, substantially as and for the purposes set forth.



J B. PAGE'S PANALOTON ENGINE.

THE PANALOTON ENGINE.

The novelty of this invention—recently patented by Mr. Page, No. 69 West street, this city—consists in the means employed to convert a reciprocating motion into a rotary motion. As applied to the steam engine, it does away with the crank, which many engineers consider suffers a loss of power by its dead points, etc. It is unnecessary to discuss these mooted points here, as our readers are undoubtedly familiar with all the arguments, *pro* and *con*, touching the subject. Mr. Page believes that a uniform leverage—that is, a constant exertion of an equal amount of power at all points of the stroke—is better than the variable leverage of the crank, and that he has succeeded in developing a larger amount of power from a cylinder of a certain diameter, with his improvement, than is possible with the crank. He has experimented for years, and is satisfied he has greatly added to the power of the ordinary engine. Its principal parts are a movable or sliding double-toothed rack in combination with a segmental pinion and rotating cam. The rack-frame, A, has secured to it at one end the piston rod of the cylinder, B, and slides in the ways, C. As the piston is sent forward and back, of course the rack moves with it. Engaging with the rack, alternately at top and bottom, is the segment of a pinion, D, secured to the main shaft, on which is the fly-wheel, E. The outline of the pinion is denoted by the dotted lines. Secured to the pinion is a cam, F, which as either end of the frame, A, approaches the centre, or the main shaft, comes in contact with the curved pieces, G, at the extremities of the rack-frame. The operation of the engine is readily understood by reference to the foregoing explanation. The cylinder and steam chest is precisely like any ordinary engine, the other parts constituting the main differences. When the piston is moved by the force of steam in either direction, it carries with it the rack-frame, A, and the rack, engaging with the segmental pinion, compels the shaft to make half a revolution. Part of this half revolution, however, is made by the momentum of the balance wheel, as the pinion is toothed only about two-fifths of its circumference. As the rack reaches the end of the stroke the cam, F, rolls against the curved guides, G, and assists in throwing the rack in the other direction. We have seen a small engine work, and its operation was as smooth, and as free from jerking as could be desired. The Woodward Steam Pump Manufacturing Company—well known to our readers—have carefully examined Mr. Page's invention, and have signified their intention to apply it to their pumps. Mr. Page is assured that his engine will develop, for pumping purposes, an actual gain of at least fifty per cent. Applied in this way it becomes a subject of peculiar interest to those interested in the development of mining property, in which economy in every particular is so necessary, and we deem this invention worthy of the attention of mining engineers, to that end, and would suggest that they and others interested call and see the engine in operation at Mr. Page's office, or address as above, for further information.

67,181.—MOLDS FOR CASTING METALS.—J. Farrar and Wm. Groves, Providence, R. I.

We claim the combination, in any flask for casting the above-named articles, of the outer case, A, the flanges, a, a, the coarse inner lining, B, composed of certain suitable materials, as set forth, and a finer grained lining, C, composed of another combination of materials to be mixed and applied, substantially as described.

67,171.—MINING AND TUNNELING MACHINE.—Richard C. M. Lovell, Covington, Ky.

1st. I claim the combination of the traverse track, the traverse platform and the adjustable carriage on which the engine is mounted, substantially as described.

2d. A mining or stone cutting machine adjustable longitudinally and laterally by means substantially as described, and having two cylinders whose piston rods are connected to a working beam.

3d. I claim in combination with the carriage, E', upon which the engine is mounted, the shaft, e, the splined wheel, E, cogged rail, A', or E', and rotating devices, d'' a a' d6, or their equivalents deriving their intermittent motion from the reciprocating motion of the working beam or its motors—the pistons.

4th. I claim the combination of the traverse platform, D, the carriage, E', the threaded shaft, g, e, and clutch nut, g, operating substantially as described.

5th. I claim the combination of the carriage, E', with its rack bar, d', on the traverse platform the pawl, d''', and latch, d''', constructed and operating substantially as described.

67,350.—MANUFACTURE OF IRON.—William Haden Richardson, Glasgow, North Britain.

I claim, 1st., The process or processes of manufacturing or producing improved malleable iron, as hereinbefore described, or any mere modification thereof.

2d. The introduction thereof of a blast or blasts of air or air and steam, either separately or combined, into the body or mass of metal in the puddling chamber, facilitating the manufacture, and for the purpose of improving the quality of iron, (in contradistinction to blowing air or steam upon the surface of the charge,) as hereinbefore described, or any mere modification thereof.

3d. The process of manufacturing iron by first introducing air or steam into its mass in the puddling chamber, and afterward finishing it in the manner of puddled iron, as hereinbefore described, or any mere modification thereof.

4th. The use and construction of hollow rabbles, passage or openings, for the purpose of introducing a blast or blasts of air or steam into the mass of molten metal in the puddling chamber, as hereinbefore described, or any mere modification thereof.

5th. The introduction of pulverized oxide of manganese (or other substance containing oxygen in combination) into the mass of molten metal in the puddling chamber, as hereinbefore described, or any mere modification thereof.

On-dit about Minerals, &c.

☞ Fresh discoveries of bituminous shales, capable of yielding petroleum by distillation, are constantly being made in France. One of the most recently worked deposits is that of Vagnas, in Ardeche, which is really more of the "boghead" type than of the bituminous shale series. Its texture is dense and compact, resembling a carbonized and compressed peat. The peaty character is still further shown by the presence of a number of vegetable fibres, which may be seen with the naked eye, and which pass from the surface into the interior of the deposit. This substance yields about five per cent. of the pure oil and a larger quantity of secondary products.

☞ **An invention has been provisionally specified by Mr. Bonneville**, of Paris, for obtaining white lead direct from the ore, by pouring the molten metal into cold water to render it as porous and bulky as possible; it is then dissolved in sulphuric acid, and the sulphate is treated with pyroligneous or oxalic acid, combined or not with tincal dissolved in water, and next dried over the fire on trays. The vessels employed are either made of stone or wood, lined with lead, which become coated with a protecting covering of lead.

☞ **Mr. Samuel Adams, of Arizona, has had an interview with** Secretary Stanton, relative to a proposed expedition to discover how far the Colorado river is navigable. He proposes to start from Denver, the head waters of the Grand river, or from Fort Bridger, and proceed down the river in flatboats to Colville, at the mouth of the Colorado.

☞ **It is stated that in York county, Pa., search is now being** made for iron ore, and considerable tracts of land have been leased for mining purposes. In portions of the county there are indications of an apparently inexhaustible supply of iron, but in many places it lies so deep as to render mining too expensive for profit.

☞ **In June, nine masses of copper were taken from the St.** Clair mine, weighing 11 536 pounds, and yielding, with barrel and stamp stuff, over fourteen tons of copper. In the first three days of July, masses weighing three tons were taken out.

☞ **A valuable bed of umber has been found at Ferdinand, Du**bois county, Ind. The deposit is extensive and easily worked, and the quality excellent. Umber has hitherto been found only in very limited quantities in this country.

☞ **A large bed of paint, of various colors and of superior** quality, has been discovered in the township of Pine Plains, seven miles from Allegan, Mich. It is three miles in length.

☞ **A new spring of sulphureted water has recently been dis**covered near the passenger house of the Boston railroad, at East Albany. The water is of excellent quality.

☞ **The quantity of zinc obtained from British ores is about** 15,000 tons per annum, considerably more than one third of which comes from the Isle of Man.

☞ **Milwaukee is talking of a lake tunnel for the purpose of** gaining a water supply. At present the sole dependence is on wells and cisterns.

☞ **Most of the iron mines in Michigan have adopted the old** system of mining, instead of quarrying, as recently practiced.

Special Scientific Brevities.

☞ **Mr. Siemens, of England, has patented a process for making** steel and iron directly from the ore, which differs from that introduced by Mr. Rogers in New Jersey, several years ago, only in the substitution of rich hydrocarbons for pulverized charcoal. The iron ore, in a finely divided state, is heated in a closed vessel, and brought in contact with hydrocarbon currents, which percolate through the mass of ore, and unite with the oxygen of the ore, thus reducing the metal.

☞ **M. Zaliwski has discovered a method of augmenting the** power of a Bunsen's battery, and making it more lasting. He uses two porous vessels, one within the other. In the inner one, which contains the carbon, he puts nitric acid, and in the outer sulphuric acid. In the outer vessel containing the zinc, he places a solution of sal ammoniac. No effervescence, it is said, takes place, and no zinc is consumed uselessly.

☞ **The lighter oils obtained in the rectification of American** petroleum has been found by a large printer, at Caen, to be the best agent for cleansing type and wood engravings. Turpentine, which is commonly used, is objectionable, on account of a portion becoming resinified, and thus clogging the finer lines of the engravings as well as small type.

☞ **Experiments are now being made, in the Isle of Man and** elsewhere, to ascertain the value of sodium, in contact with water and other substances, for blasting purposes.

☞ **Petroleum is said to have been successfully used in place of** bisulphide of carbon for extracting oils from seeds and rags.

All Sorts.

☞ A wealthy widow, advertising for an agent, was overwhelmed with applications, as the types, by mistake, made it "a gent."

☞ **THIN MAN.**—"Boy, what does that hungry-looking dog follow me for?" INSULTING BOY.—"He thinks you're a bone, I reckon."

☞ **The Scranton (Pa.) *Republican* reports that in a meadow** near that city the soil emits quantities of inflammable gas.

☞ **"I am a broken man!" exclaimed a poet. "So I think,"** was the answer, "for I have seen your pieces."

☞ **Why can you not prevent the Mississippi from overflowing** its banks? Because, dam it you can't.

☞ **General Meagher's successor, Mr. James Tuft, was on his** way to Montana when Meagher died.

☞ **It was said of the late Dr. Whewell that "science was his** forte, and omniscience his foible."

The American Institute Exhibition.

We are in receipt of letters asking for information relative to the coming Exhibition by the American Institute, which promises, from what we hear, to surpass all previous displays of the results of American ingenuity and skill. Elsewere will be found an advertisement that gives particulars relative to how to proceed to secure a place, etc. The attention of those who have written to us and others, is directed to it.

THE EUREKA BRICK MACHINE

IS ADMITTED BY EVERY BRICKMAKER WHO HAS SEEN IT TO BE THE simplest, most powerful, and every way the most desirable Clay Tempering machine in America. With only

ONE PAIR OF HORSES AND NINE HANDS,

it will make 3,000 GOOD BRICKS PER HOUR;
and with steam power, 4,320 PER HOUR.

It has no complex machinery to be continually getting out of order and breaking down, and does not require skilled laborers to run it. We have also a Re-pressing Brick Machine for making Philadelphia front bricks, and one man and one boy can re-press 4,000 per day. We have also the best Hay Fork in the world. The Empire Shingle machine is the best Shingle machine in use.

ABRAM REQUA, General Agent for United States,
23:2:9p 141 Broadway, N. Y.

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This Machine, combining entirely new improvements, makes from

3,000 to 3,500 BRICKS PER HOUR,

WITH EIGHT MEN AND TWO HORSES.

Strong, simple and durable, and not likely to get out of order.

Price of Machine.....$600.

Molds and trucks extra. Manufactured and for sale by

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SUCCESSORS TO DANIEL PACKER AND CO.,
MINERS AND SHIPPERS OF
ANTHRACITE AND BITUMINOUS COAL,
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PROVINCIAL COAL,
ANTHRACITE COAL,
For Sale in Lots to suit.

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31:qp:q Yard, West 22d Street, near 10th Avenue.

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BLACK DIAMOND VEIN, RED ASH.
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Agents for the celebrated "Hartford Co. Coal." vol2 5-qp

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McNeal, Wilkesbarre and Lehigh Coal,
FOR STEAM AND FAMILY USE.
OFFICE,
Room No. 75, 111 Broadway, (Trinity Building, Broadway, N. Y.
JNO. WHITE. 3:1:qp:q LOUIS T. SNOW.

A. T. STOUT & CO.,

MINERS AND SHIPPERS OF
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FULTON LUMP,
(Especially adapted for smelting Iron.)
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1:3.50

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WHOLESALE DEALERS IN
ANTHRACITE AND BITUMINOUS COAL,
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BOSTON, Office 144 State St. PHILADELPHIA, 112 Walnut St.
3:2:qp:q

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MINERS AND SHIPPERS OF
REPPLIER'S LOCUST MOUNTAIN, DUNCAN RED ASH,
AND
CUMBERLAND COALS.
WHARF, NORTH EIGHTH STREET, WILLIAMSBURG.
Office, - - - - - - - 111 Broadway, New York.
1:3.qp

HONEY BROOK COAL COMPANY,

Exclusive Miners and Shippers of the Celebrated
HONEY BROOK LEHIGH COAL,
NO. 113 BROADWAY, NEW YORK.
JAS. H. LYLES, Agent.
Wharves, Port Johnston, N. J. Philadelphia Office, 209 Walnut street.
3:6:qp:q **J. B. McCREARY, President.**

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SPRING MOUNTAIN AND HONEY BROOK LEHIGH COALS.
ALSO,
GEORGE'S CREEK COALS.
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7:3:ly H. & R. McKENZIE, Proprietors, Houghton, Michigan.

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SOLE AGENTS OF THE ORIGINAL
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3:4:qp:q

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Send for Circular. No. 8 DEY STREET, New York.

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ISSUED FOR MINING PURPOSES—60,000 SHARES AT $10 EACH.

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JOHN J. THOMAS.....New York City.
JOHN T. GREEN.....New York City.
E. PAGE DAVIS.....Unionville, Nevada.
Hon. STEPHEN HAYNES.....Brooklyn, N. Y.
Subscription Office of the Company, No 30 PINE STREET, Room No. 4.
3:3 3:28

ROCKY MOUNTAIN NEWS.

DAILY AND WEEKLY.
The Pioneer and Leading Newspaper of the Rocky Mountain Country.
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The best medium for advertisers to reach all parts of Colorado, New Mexico, Utah, and Montana.
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Pre-eminently the best Piano ever constructed, unrivalled for tone, durability and elegance of finish. The Brooklyn Daily Times says: "It has in higher degree than any Piano that we have met with, the singing quality or character that musicians so much admire and seek for in a Piano; the bass notes reminding you of the deep-toned notes of a large organ. The middle octaves are more elastic and clear than in most other Pianos, while the upper or treble notes possess that pure, distinct, bell-like clearness that is so necessary to the correct rendering of difficult pieces of music, and that also lends such a charm to melody." Professor J. M. Abbott, organist of the Church of Our Saviour, in Brooklyn, says: "For elasticity of touch, for the singing quality so much sought for by artists, and for richness and purity of tone, it is unexcelled by any Piano I have ever used." Professor John W. Henry Canoll, editor of the American Educational Monthly, says: * * * * * Listen, however, to one of another class, for example, one of the Arion Pianos, made by Manner & Co.; how your head as the bass sends forth its riches, clear and unblurred: observe the singing, swelling melody that in its middle octaves so wondrously represents vocal expression, and which predominates above even the silvery brilliancy of the upper treble; then reflect that this is a scientifically constructed and durable instrument." * * *

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Nets for the Southern, West Indian and South American trade are made of a material of close texture, such as is ordinarily used as a protection against Flies and other small insects. The attention of Tourists and Travellers generally is invited to them, as, aside from their comparatively perfect protection from insects of all kinds, they can be folded up and packed, without danger or injury, in an ordinary carpet bag, and are ready for use at all times and in all places, without adjustment or trouble.

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ESTABLISHED] [MAY, 1860.

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W. B. EWER. C. W. M. SMITH. A. T. DEWEY.
9:3.1.a-m-qp

THE
UNION PACIFIC
Railroad Company.

THEIR FIRST MORTGAGE BONDS AS AN INVESTMENT.

The rapid progress of the Union Pacific Railroad, now building west from Omaha, Nebraska, and forming, with its western connections, an unbroken line across the continent, attracts attention to the value of the First Mortgage Bonds which the Company now offer to the public. The first question asked by prudent investors is, "Are these bonds secure?" Next, "Are they a profitable investment?" To reply is brief:

1st. The early completion of the whole great line to the Pacific is as certain as any future business event can be. The Government grant of over twenty million acres of land and fifty million dollars in its own bonds practically guarantees it. One fourth of the work is already done, and the track continues to be laid at the rate of two miles a day.

2d. The Union Pacific Railroad bonds are issued upon what promises to be one of the most profitable lines of railroad in the country. For many years it must be the only line connecting the Atlantic and Pacific; and being without competition, it can maintain remunerative rates.

3d. 376 miles of the road are finished, and fully equipped with depots, locomotives, cars, &c., and two trains are daily running each way. The materials for the remaining 141 miles to the eastern base of the Rocky Mountains are on hand, and it is under contract to be done in September.

4th. The net earnings of the sections already finished are *several times greater* than the gold interest upon the First Mortgage Bonds upon such sections, and if not another mile of the road were built, the part already completed would not only pay interest and expenses, but be profitable to the Company.

5th. The Union Pacific Railroad bonds can be issued only as the road progresses, and therefore can never be in the market unless they represent a *bona fide* property.

6th. Their amount is strictly limited by law to a sum equal to what is granted by the U. S. Government, and for which it takes a *second* lien as its security. This amount upon the first 517 miles west from Omaha is only $16,000 per mile.

7th. The fact that the U. S. Government considers a second lien upon the road a good investment, and that some of the shrewdest railroad builders of the country have already paid in five million dollars upon the stock (which is to them a third lien), may well inspire confidence in a first lien.

8th. Although it is not claimed that there can be any better securities than Governments, there are parties who consider a first mortgage upon such a property as this the very best security in the world, and who sell their Governments to re-invest in these bonds—thus securing a greater interest.

9th. As the Union Pacific Railroad bonds are offered, for the present, at 90 cents on the dollar and accrued interest, they are the cheapest security in the market, being 15 per cent. less than U. S. Stocks.

10th. At the current rate of premium on gold, they pay

Over Nine Per Cent. Interest.

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CLARK, DODGE & CO., Bankers, 51 Wall street.
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AT THE

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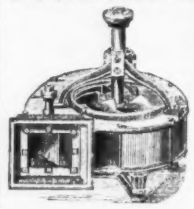

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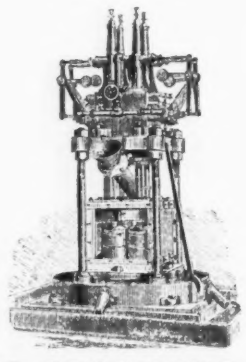

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3:11:3m WM. B. ROGERS, President.

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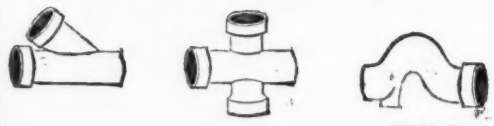

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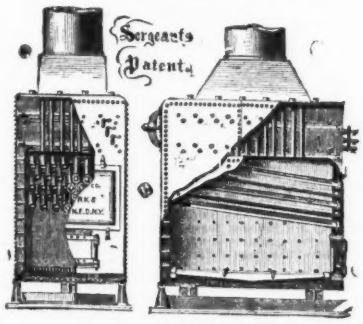

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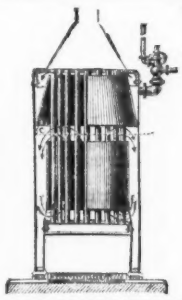

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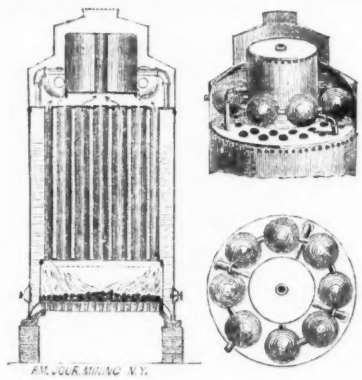

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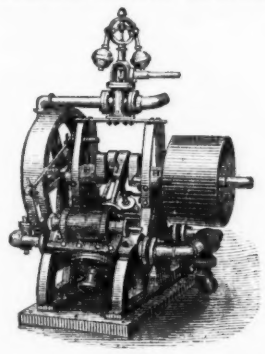

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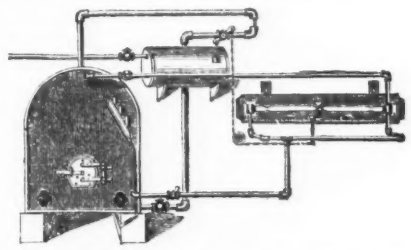

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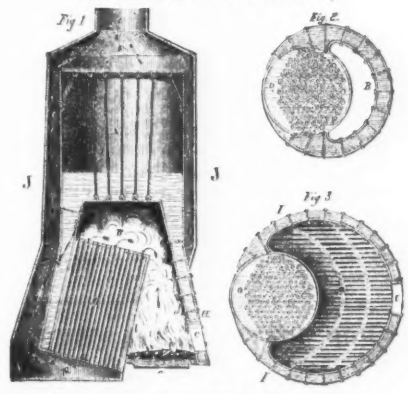

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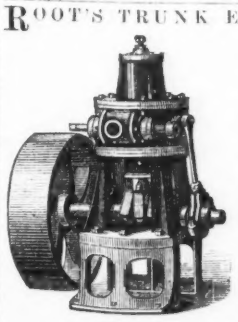

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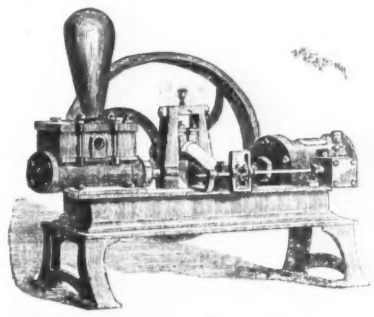

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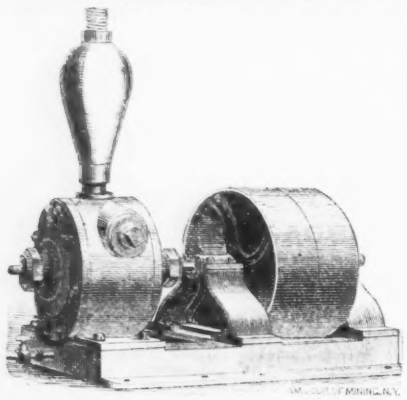

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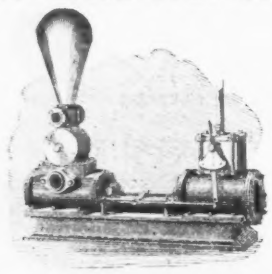

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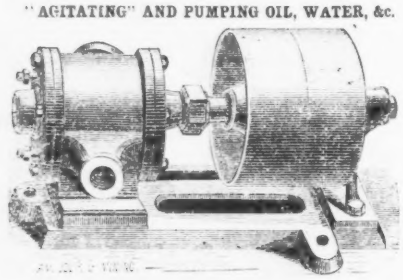

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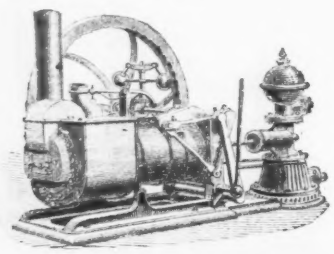

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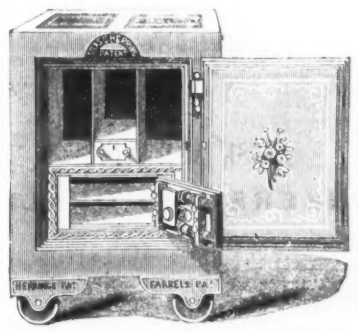

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MISCELLANEOUS.

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BANKERS,

And Dealers in

GOVERNMENT AND OTHER DESIRABLE SECURITIES.

No. 5 NASSAU STREET, N. Y.,

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FIRST MORTGAGE BONDS

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This Company is constructing, under the patronage of the

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the Western end of the

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of the only route to the Pacific which is adopted by Congress and

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of the Company afford unusual inducements of safety and profit to investors, for the following among other reasons, viz:—

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Third.—The cost of the Roads, Ninety five per cent. and accrued interest is Ten per cent. less than that of the cheapest SIX per cent. Gold Bearing Bonds of the Government.

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9:3:2m

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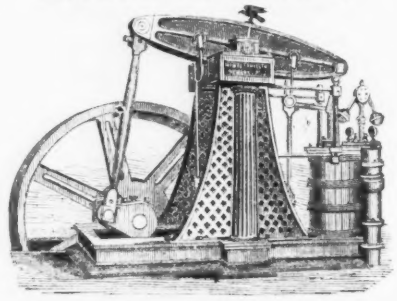

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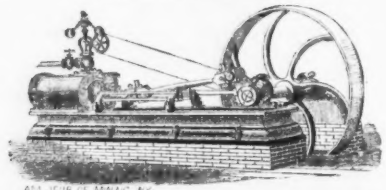

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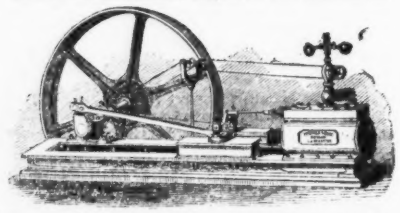

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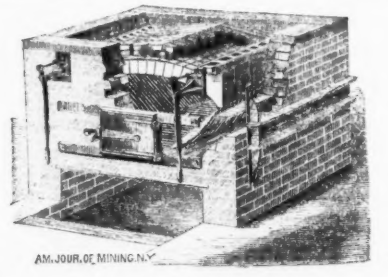

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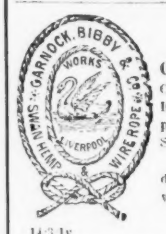

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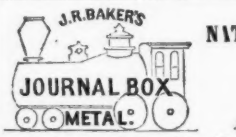

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